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This document is classified SECRET due to the information it contains relative to the status, planning and developments in the guided missile field.

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4	Address by General Power at the 25th Anniversary of the Founding of Barksdale AFB, 1 Feb 1958.
5	SAC Operational Plan SM-62-2 (SNARK), 8 Jan 1958.
6	Ltr, VCINCSAC to CofS USAF, "Low Level Attack Capability," 14 May 1958.
7	DF, D/Instls Eng to D/Eng, "Operational Snark Facilities," 15 Apr 1958.
8	DF, D/Ops to D/Instls Eng, "Operational Snark Facilities," 4 Apr 1958.
9	Ltr, Gen Curtis E. LeMay to Gen Power (Relative to facilities at Presque Isle), 20 Feb 1958.
10	TWX, COMAF 8 to CINCSAC, C 20783, "Support Facilities and Follow-on Mission for Presque Isle," 20 Jun 1958.

EXHIBITS

11 TWX, CINCSAC to USAFIR NER Boston, COMFTRGP 23, Presque Isle AFB, Maine, DECM 5449, "Construction of Snark Facilities, Presque Isle AFB, Maine," 7 May 1958.

12 SAC Programming Plan 17-58, "SM-62 Program, 9 Jul 1958.

13 DF, DPL to all Directorates, "SM-62 Program," 8 May 1958.

14 TWX, Hq USAF to CINCSAC, AFOOP-OP-U 56600, "SM-73 Bases," 13 Feb 1958.

15 TWX, Hq USAF to CINCSAC, AFOOP 51284, "Co-Location of B-52/SM-73," 26 May 1958.

16 TWX, Hq USAF to CINCSAC, AFOOP-OC-B-3 51637, "SM-73 Goose Operational Plan (Revised)," 4 Jun 1958.

17 SAC Operational Plan 3-58, "SM-73 Goose," 1 Jul 1958.

18 DF, Programs Div D/Plns to DE Hq SAC, "Base Facilities SM-73", 13 May 1958.

19 Memo, D/Plns to Gen Westover, Hq SAC, "Status of the SM-73 (Goose) Program," 24 Apr 1958.

20 DF, DE to Gen Westover, "SM-73 (GOOSE) Program," 26 Jun 1958.

21 SAC Operational Plan 2-58 (SM-75 Thor), 25 Feb 1958.

22 SAC Operational Plan 1-58 (SM-78 Jupiter), 4 Mar 1958.

23 SAC Programming Plan 12-58, "SM-75 Program (Thor for Four RAF Squadrons)," 23 Apr 1958.

24 U.S. - U.K. Memorandum of Understanding, 22 Feb 1958.

25 Ltr, Gen W. H. Blanchard to Gen Power, 26 Jun 1958, w/incl: U.S. - RAF Technical Agreement, 26 Jun 1958.

26 TWX, Hq USAF to CUSNMR Paris, CINCSAC, CINCUSAFE, (DOUGLAS TO NORSTAD), 56966, 26 Feb 1958.

EXHIBITS

27 Memo for Record, "USAF/FAF SM-78 (JUPITER) Conferences, 5-16 May 1958," 2 Jun 1958.

28 Ltr, Maj Gen J. Smart, USAF, to CINCSAC, "IRBM Deployment Plans," 12 Mar 1958.

29 Memo, Secretary of the Air Force to the Secretary of Defense, "Future Deployments of the Intermediate Range Ballistic Missile," 27 Mar 1958.

30 Memo for Record, FS&FW Br D/Plns Hq SAC, "Site Survey Visit to Alaska for IRBM Deployment Sites," 4 Apr 1958.

31 Memo, Mr. W. M. Holaday to the Secretary of the Air Force, "Future Deployments of the JUPITER IRBM Squadrons," 9 May 1958.

32 TWX, Gen Power to Gen Curtis E. LeMay, C 6295, "Deployment of IRBM's", 27 May 1958.

33 TWX, Hq USAF to AFBMF ARDC, AFOIE-CS 51677, "Alaskan IRBM Facilities," 4 Jun 1958.

34 Ltr, SAC MIKE to CINCSAC, 4 Apr 1958, with attached ltr, Gen Schriever to Comdr ARDC, "Jupiter," 29 Mar 1958.

35 Memo, Mr. W. M. Holaday to Secretary of the Air Force, "THOR Program," 25 Apr 1958.

36 Memo for Distribution, Office of Assist CofS for Guided Missiles, "Revised IRBM Program," 1 May 1958.

37 GO 12, Hq SAC, 11 Mar 1958.

38 GO 33, Hq SAC, 25 Jun 1958.

39 GO 13, Hq SAC, 12 Mar 1958.

40 SAC Operational Plan 7-58, "SM-65 Atlas," 15 May 1958.

41 SAC Operational Plan 8-58, "SM-68 Titan," 15 Jun 1958.

42 Memo, DPLC to Col Lyle D/Plns Hq SAC, "Summary of ICBM Site Selection Activities," 7 Feb 1958.

EXHIBITS

43 TWX, CINCSAC to CofS USAF, DPL 7250, "ICBM Base Requirements," 7 Nov 1958.

44 DF, DE to D/Plns Hq SAC, "Site Selection - ICBM," 26 Dec 1957.

45 TWX, CINCSAC to CofS USAF, DPLBC 1033, "Area Location for ICBM Units," 25 Jan 1958.

46 TWX, Hq USAF to ALLMAJCOMS, AFOOP 57755, "ICBM Dispersal/Location," 7 Mar 1958.

47 DF, D/Plns to all Directorates, "Location of Strategic Missile Units on SAC Bases," 3 Feb 1958.

48 TWX, CINCSAC to CofS USAF, "ICBM Siting Concept," 11 Mar 1958.

49 TWX, Hq USAF to CINCSAC, SAC MIKE, AFBMD, AFOOP 57778, "Phasing and Operations of ICBM," 10 Mar 1958.

50 TWX, CINCSAC to CofS USAF, DPL 3657, "ICBM Configuration," 26 Mar 1958.

51 Study, "SM-65 (ATLAS) Configuration Study Actions, 2 Apr - 1 May 1958, 28 Apr 1958.

52 Memo, Dep Chief, Plns Div Hq SAC to Gen Westover, "(U) Site Locations for SM-68 (Titan)," 3 Jul 1958.

53 TWX, Hq USAF to CINCSAC, AFCGM 52641, "Denver/Titan Squadron Problem," 26 Jun 1958.

54 Memo, Mr. Malcolm A. MacIntyre to Secretary of the Air Force, "(CONF) Siting of TITAN Units in the Denver Area," 30 Apr 1958.

55 Memo, Maj Gen Charles M. McCorkle to D/Ops DCS/O Hq USAF, "TITAN Siting," 1 May 1958.

CHAPTER II

56 SAC Programming Plan 3-58, "(~~CONF~~) DB-47/GAM-63 Integration Program (RASCAL)," 10 Jan 1958.

EXHIBITS

57 Progress Report No. 1 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL)," 28 Feb 1958.

58 Progress Report No. 2 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL)," 14 May 1958.

59 GAM-63 (RASCAL) Installations Plan, 2 Apr 1958.

60 Memo for Record, "GAM-63 Weapon System Phasing Group Meeting," 26 Feb 1958.

61 Ltr, Gen Curtis E. LeMay to CINCSAC, "Participation in Systems Test Programs," 7 Apr 1958.

62 TWX, Comdr Det 1, ARDC WPAFB to CINCSAC, "Accelerated Program for WS-131B Hound Dog," 24 Jan 1958.

63 Joint Msgform, CINCSAC to CofS USAF, "Accelerated Program for GAM-77 HOUND DOG," 31 Jan 1958.

64 TWX, Hq USAF to CINCSAC, AFOOP-OP-U 51091, "GAM-77 Program", 21 May 1958.

65 TWX, CINCSAC to 2nd, 8th, 15th AF, DEDP 6338, "GAM-77 Program," 27 May 1958.

66 DF, D/Ops to D/Instls Eng, "GAM-72 & 77," 25 Feb 1958.

67 Memo, Chief, Force Structure Section Plans Div D/Plns to Brig Gen C. B. Westover, D/Ops Hq SAC, "Status of GAM-72 (QUAIL) Program," 24 Apr 1958.

68 TWX, CINCSAC to CofS USAF, DPL 5629, "GAM-72 Facilities and Equippage," 10 May 1958.

69 TWX, Hq USAF to ARDC, AFDRD 51578, "GAM-72 Weapon System," 3 Jun 1958.

CHAPTER III

70 Memo, Mr. Neil H. McElroy to the Secretary of the Air Force, "Air Force WS-117L Program, (Reconnaissance System)," 24 Feb 1958.

EXHIBITS

71 TWX, ARDC to AFBMD, Cite TWX 03-014, "Reconnaissance Satellites and Manned Space Exploration," 5 Mar 1958.

72 TWX, AFBMD to USAF, ARDC, AMC, BMO, SAC USAFSS, AACS, SAC MIKE, WDTR-2-13-E, "Formation of WS-117L Site Selection Board To Provide Development/Operational Support of WS-117L," 14 Feb 1958.

73 TWX, ARDC to USAF INSTLS REP NOR ATL REGION, AMC, SAC, USAF, ARDC, AACS, WDIR-3-9-E PD, "WS-117L Site Selection team," 6 Mar 1958.

74 *Minutes of the WS-117L Site Selection Board*, 11 Jun 1958.

75 Memo for Record, "Report of WS-117L Weapons System Phasing Group Meeting, 21 - 22 May 1958," 28 May 1958.

SUPPLEMENTARY DATA

SAC Strategic Missiles Monthly Progress Reports, Jan - June 1958.

SAC Missile and Satellite Program Brief, Presentation to Comdr's Conference 19 - 21 Aug 1958, Office of Asst CINCSAC (SAC MIKE), 15 Aug 1958.

INTRODUCTION

The Strategic Air Command's missile activities during the first half of 1958 were highlighted by efforts to speed up operational planning for the ballistic missile, the Hound Dog (an air-to-surface missile), and the WS-117L Advanced Reconnaissance System (for orbiting reconnaissance vehicles) programs. The first program reflected the implementation of some of the 14 measures taken by the Secretary of Defense, Mr. Neil H. McElroy, late in 1957 and early in 1958, to accelerate the development of those weapon systems deemed most vital to U. S. defense.[1]

Although the decision to accelerate the ballistic missile program was made late in 1957,[2] implementing actions continued during the early months of 1958. The transfer of the 1st Missile Division at Cooke AFB, Lompoc, California from ARDC to SAC effective 1 January 1958, required that the division be staffed by SAC personnel. The creation of an Office of Assistant CINCSAC (SAC MIKE), at AFBMD in Inglewood, California, also effective 1 January 1958, likewise required SAC staffing. The functions of the SAC MIKE office were defined in a SAC staff memo issued late in January.[3] Initial

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1. Actions Taken by the Office of the Secretary of Defense to Speed up the Missile Programs, 22 Jan 1958, Exhibit 1.
2. Historical Study No. 70, Vol I, pp 44; 68, filed in Hist Div Archives, Hq SAC.
3. SAC Staff Memo 11-44, "Administrative Practices," (SAC MIKE Office), 29 Jan 1958, Exhibit 2.

staffing of this office had been completed by early February.[4]

The decisions to speed up the WS-117L and the Hound Dog programs were taken in February 1958[5] and April 1958,[6] respectively. The former program, which was given the highest national priority, firmly placed SAC into the field of outer space operational planning. It was generally assumed that SAC would eventually be given operational control over orbiting reconnaissance vehicles.[7]

The acceleration of the foregoing missile and space systems, plus continuance of operational planning for other missile weapon systems, significantly increased the volume of SAC's financial and manpower resources devoted to the missile and space fields during the first half of 1958. Although SAC believed that the strain on its resources, as well as on other Air Force agencies, could be profitably lessened by cancelling several unwanted missile systems--notably the Snark, RASCAL and Jupiter, higher level policy decisions required that they be integrated, if only in token fashion, into the SAC inventory.[8] Of particular concern to CINCSAC was the

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[4] DF, ADJ SAC to all Directorates, "SAC MIKE Offices and Personnel," 3 Feb 1958, Exhibit 3.

[5] See p 70.

[6] See p 59.

[7] Interview, J. Van Staaveren, Historian with Col E. A. Vivian, Chief, FS&FW Section, D/Plns, Hq SAC, 18 Sep 1958.

[8] For a detailed discussion of SAC's position with respect to the Snark, RASCAL and Jupiter weapon systems see Historical Study No. 70, Vol I, filed in Hist Div, Hq SAC; Interview J. Van Staaveren with Col E. A. Vivian, Chief FS&FW System D/Plns, Hq SAC, 18 Sep 1958.

Chapter I

SURFACE-TO-SURFACE MISSILE WEAPON SYSTEMS

THE WS-103A SNARK SM-62

As a result of high level decisions taken late in 1957, the Snark program was limited to 51 production type missiles of which 30 would be used for operational purposes. This provided for a Snark operational force equal to two squadrons, each equipped with 15 missiles. In order to save manpower spaces and facilities, however, the two squadrons would be combined into a single unit and would be designated the 702d Strategic Missile Squadron upon activation at Presque Isle Air Force Base on 1 July 1959. The squadron would be placed under the operational control of Headquarters, Eighth Air Force at that time.[13]

The foregoing changes, which reduced the size of the Snark program from eight to two squadrons, required a complete revision of the Snark Operational Plan. The new plan, completed in January, contained more details than provided heretofore on Snark tactical and operational concepts. After being integrated into the EWP, Snark missiles would be used initially only against area type air power targets. They would be programmed to fly the Great Circle route within a 360 nautical mile corridor in order to reach their assigned targets. To avoid "traffic" congestion with manned bombers, special departure SOP's and/or specific corridors would be assigned to Snark missiles. Insofar as practical, missiles would not overfly friendly populations or heavily defended complexes en route to their targets.[14]

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[13] Historical Study No. 70, Vol I, p. 10, filed in Hist Div Archives, Hq SAC.

Although the ultimate objective for all SAC strategic missiles called for an instantaneous salvo of all missiles upon the receipt of an execution order, the design of the Snark weapon system, as it existed in January, would preclude attainment of this goal. For planning purposes, however, three launching rates of in-commission missiles were possible, depending upon the makeup of the preflight console and an assured 24-hour per day manning of the Snark squadron.[15] The rates were as follows:[16]

Category 1. Twenty percent of the missile inventory within three hours and the total inventory within 10 hours.

Category 2. Twenty percent of the missile inventory within one hour and the total inventory within four hours.

Category 3. Twenty percent of the missile inventory within 15 minutes and the total inventory within two hours and fifteen minutes.

It was deemed possible to obtain the launching rates of categories one and two on a continuing basis but not category three because of excessive manpower and spare parts costs. It could be

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14. SAC Operational Plan SM-62-2, 8 Jan 1958, pp. 9-11, Exhibit 5.

15. On 21 January Hq USAF approved a 24-hour manning concept for the Snark squadron. TWX, Hq USAF to CINCSAC, AFOOP-OC 55429, 21 Jan 1958, filed in D/Plns, Hq SAC.

16. SAC Operational Plan 62-2, 8 Jan 1958, pp. 8-11, Exhibit 5.

maintained for short periods of tension, however, thereby providing a temporary strategic advantage.[17]

Four annexes to the Operational Plan contained detailed unit manning documents, maintenance procedures, supply policies and procedures, unit activation and training schedule, and a missile production and equipment delivery schedule for the Snark force.[18]

Notwithstanding the decisions taken late in 1957 to establish only a small Snark operational force, various pressures continued to be exerted upon SAC and USAF to enlarge the Snark program. Hearings by the Senate Preparedness Investigating Subcommittee, which began in November 1957 and continued through January 1958, indicated considerable Congressional interest in the Snark weapon system for strategic purposes. Although General Nathan F. Twining, Chairman of the JCS, General Thomas D. White, Chief of Staff, Headquarters USAF, Mr. Donald A. Quarles, Deputy Secretary of Defense and Mr. Neil H. McElroy, Secretary of Defense, variously testified that the reduced output of Snark missiles was due to a lack of funds and/or because the Snark weapon system had been given a lower priority because of the more promising ICBM program, the wisdom of this policy was sharply questioned by members of the Subcommittee. Senators John Stennis of Mississippi and Prescott Bush of Connecticut clearly indicated that they considered the Snark to be a very good intercontinental missile and asked the Defense Department officials to reappraise their decision to reduce Snark production.

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[17] *Ibid.*

[18] *Ibid.*

Both Deputy Secretary Quarles and Secretary McElroy promised to make this reappraisal.[19] Their positions remained unchanged. However in June, Senator Stuart Symington, another member of the Subcommittee, expressed to the Secretary of the Air Force, Mr. James H. Douglas, and the Defense Department's Director for Guided Missiles, Mr. William H. Holaday, his dissatisfaction with the low priority status given the Snark and the fact that production was being limited to one missile per month.[20]

Members of a House Subcommittee holding hearings on Defense Appropriations for FY 1959, also manifested interest in a larger Snark force. However, Lieutenant General John K. Gerhart, Deputy Chief of Staff for Plans and Programs, Headquarters USAF, explained in March that the Snark had a significantly less payload than a B-52, that it was a "one shot" weapon, and that it lacked the flexibility and the accuracy of a B-52. He also stressed the problems of budgetary restrictions and weapon system priorities as bearing on the decision to maintain a reduced Snark program. Questioned about the relative costs of a Snark and B-52 squadrons, General Gerhart indicated that a Snark squadron of 15 missiles plus military and other support costs was estimated at $60,000,000 whereas a B-52 squadron composed of 15 B-52 aircraft and KC-135 jet tankers plus military and other support costs was estimated at $150,000,000.

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19. Senate, Hearings on Inquiry Into Satellite and Missile Programs by the Preparedness Investigating Subcommittee of the Committee on Armed Services, 85th Congress, Part II, 1958, pp 1576; 1836-37; 2049-58; 2072-78.
20. Senate, Hearings on Department of Defense Appropriations for 1959, by the Subcommittee of the Committee on Appropriations, 85th Cong, 1958, pp 249; 418.

Both estimates were exclusive of construction costs.[21]

Officials of the Northrup Aviation, Inc. (NAI), the prime contractor for the Snark, also continued to exert pressure on SAC, USAF, ARDC and other Air Force agencies to persuade them to invest in a larger Snark force. In January, the NAI officials proposed certain modifications on Snark missiles which would give them a low level attack capability. At the request of Headquarters USAF, both SAC and ARDC undertook studies of SAC's low level attack needs, costs, and the possible use of additional Snark missiles for this purpose.[22]

As a result of these studies, SAC concluded that, because of the limitations of funds and because of the higher priority requirement for a SAC manned bomber force with supporting jet tankers, it would not be practical to augment SAC's low level capability with Snark missile units (this position also held with respect to the possible use of the shorter range surface-to-surface Matador missile for low level purposes). Money and manpower, SAC observed, could be better spent to meet the jet tanker force requirements prescribed in SAC's 1962 Force Requirements. Furthermore, a subsonic cruise missile

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21. Hearings Before the Subcommittee of the Committee on Appropriations on Department of Defense Appropriations for 1959, Vol on Department of the Air Force, 85th Congress, Second Session, 1958, pp 39-44, filed in Hist Div Archives, Hq SAC.

22. TWX, Hq USAF to ARDC, AFDRD-SA 55935, 30 Jan 1958, filed in D/Plns, Hq SAC; DF, Missile Div D/Ops to D/Compt, "Supplemental Monthly Missile Report," 6 Feb 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

would not meet the requirements of flexibility of employment, the "positive control" concept inherent in aircraft, and the desired end position for airborne alert.[23]

In March, NAI officials sought to induce the Air Force to purchase an additional 120 Snark missiles on the basis of an improved operational concept which would provide for a dispersed force (six missiles per site, in fixed launchers, with one missile per building), fast reaction plus incorporation of the low level attack capability which had been proposed in January.[24] As a result of this briefing, the Air Staff again asked SAC to examine the possibilities of expanding the Snark program.[25]

Although SAC recognized that the NAI's fast reaction concept (known as a Snark Maximum Attack Capability or a "SMAC" concept providing for a 100 percent salvo of the inventory vs the 20 percent salvo of the inventory provided for in the existing Operational Plan), would make the Snark weapon system more desirable, the proposed changes would also create many problems. Facilities would have to be redesigned, the established July

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[23] Ltr, VCINCSAC to CofS USAF, "Low Level Attack Capability," 14 May 1958, Exhibit 6.

[24] DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 8 Apr 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

[25] DF, D/Instls Eng to D/Eng, "Operational Snark Facilities," 15 Apr 1958, Exhibit 7.

1959 BOD for the Snark force at Presque Isle AFB would slip, costs would greatly increase and additional funds would have to be taken from other higher priority and more desirable SAC weapons programs. As a consequence, CINCSAC concluded that:[26]

1. Expansion of the Snark force beyond 30 weapons was not desirable.

2. Implementation of the 100 percent salvo operational (or SMAC) concept should be considered only if the Snark force was increased by the direction of Headquarters USAF. In this event, Headquarters USAF should permit the joint proposals of the WSPO, SAC and NAI on basing, BOD's and operational dates for the entire force to be configured to meet the SMAC concept.

3. Because construction at Presque Isle Air Force Base would begin in late May 1958 and continue on a very tight schedule throughout CY 1958 and 1959, no change should be made in the schedule. Thus, any decision to increase the Snark force should be made prior to the beginning construction date.[27]

As Headquarters USAF took no further action on the SMAC concept, the Snark program remained unchanged in scope.[28]

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[26] Ibid., DF, D/Ops to D/Instls Engr, "Operational Snark Facilities," 4 Apr 1958, Exhibit 8.

[27] Ibid.

[28] Interview, J. Van Staaveren, Historian with Maj L. R. Harvey, D/Plns, Hq SAC, 6 Aug 1958.

The construction of adequate support facilities at Presque Isle Air Force Base was also a matter of concern to SAC during the first half of 1958, and constant difficulty was experienced in obtaining Headquarters USAF approval of funding for the desired facilities. This was because Presque Isle AFB would not become a "hard core" base (i.e., a base designed to become permanent and on which limited MCP funds could be spent on a continuing basis to convert it into a first class facility for follow-on weapon systems), and because the Snark weapon system had only a limited life expectancy. Although both CINCSAC and the Commander of the Eighth Air Force recommended during the reporting period that Presque Isle Air Force Base become a hard base installation with a follow-on mission, thereby assuring more adequate facilities, the Air Staff did not concur. They believed that the subarctic location of the base would create too many difficulties for sensitive missile components and that past experience indicated that this environment created troop morale problems, regardless of facilities provided. The Eighth Air Force Commander, however, believed that operational experiences at Northeast bases showed that a combination of good facilities and a good commander could insure good troop morale. Consequently, he urged in June that the Air Staff position be reconsidered. He also recommended that Presque Isle Air Force Base be placed under Loring Air Force Base in Maine and that future Air Division commanders become operationally responsible for both bomber and missile units in order to forge a strong bond between manned and unmanned operational capabilities. No official action had been taken on these recommendations by the end of the month.[29]

By the end of June the Snark construction program at Presque Isle Air Force Base generally was proceeding on schedule although it was doubtful if SAC would be able to provide much better than World War II type of facilities for the 2,572 personnel (240 officers, 2,088 enlisted and 244 civilians) who would be stationed there.[30] Early in July, SAC published a new programming plan which contained the latest refined activation, training, missile production and equipping schedules for the Snark program. The major Snark facility requirements were also listed.[31]

A communication from Headquarters USAF on 29 April resulted in several adjustments in plans to activate, transfer and reorganize Snark units. The essential changes were summarized and distributed to all SAC directorates early in May.[32]

Flight test of Snark missiles continued during the first half of 1958 with at least one missile test conducted each month. The 54th and the most successful of all Snark flights on 25 January provided the most severe exercise of the guidance system to date. The missile flew to Ascension Island (maximum range) and impacted one nautical mile short and one quarter nautical mile to the left of the desired impact area after a flight of eight hours and thirty-three minutes. Thereafter, various forms of malfunctioning marred Snark flight tests in the succeeding five months. A test on 14 February to Ascension Island was successful until the nose cone failed to release automatically and had to be released by command control. A flight on 8 March resulted in the loss of missile beacon and telemetry signals about 200 nautical miles from Ascension Island and the missile presumably destroyed itself. Telemetry was again lost about 3,800 nautical miles down range and the missile self-destroyed during a flight on 3 April. Two missiles were launched in May. The first, on 7 May, was successful except for failure of the automatic nose cone release near Ascension Island. When released by command control it was with an approximate 24 nautical mile error from the desired impact area. During second flight, on 28 May (and the last contractor flight type E Snark missile), the left pylon tank failed to release causing the missile to spiral and impact about 600 nautical miles down range. A test on 27 June represented the first all military launch of a phase VII equipment and suitability test missile by the 556th Strategic Missile Squadron at Patrick Air Force Base under the supervision of the AFMTC's 6555th Guided Missile Squadron. The launching was successful but the flight was terminated one hour later because of power failure. Loss of power and pylon tank ejection occurred almost simultaneously. It was subsequently determined that this was caused by malfunctioning of ejection cartridges. Notwithstanding the difficulties experienced in the flight tests, much valuable information was obtained.[33]

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[29] Ltr, Gen Curtis E. LeMay to Gen Power, 20 Feb 1958, Exhibit 9; TWX, Comdr 8th AF to CINCSAC T/C 20783, 21 Jun 1958, Exhibit 10.

[30] TWX, CINCSAC to USAFIR NER Boston, COMFTRGP 23, Presque Isle, Maine, DECM 5449, 7 May 1958, Exhibit 11; Interview, J. Van Staaveren, Historian, with Maj L. R. Harvey, D/Plns, Hq SAC, 8 Aug 1958.

[31] SAC Programming Plan 17-58, "SM-62 Program," 9 Jul 1958, Exhibit 12.

[32] DF, DPL to all directorates, "SM-62 Program," 8 May 1958, Exhibit 13.

THE WS-123A GOOSE SM-73

By the end of 1957, Headquarters USAF had approved three Goose sites, Ethan Allen Air Force Base, Vermont, Duluth Municipal Airport, Minnesota, and Otis Air Force Base, Massachusetts. Construction funds for FY 1958, however, were made available for only the first two Air Force bases.[34] On 13 February, Headquarters USAF approved three more Goose sites, Kinross, K. I. Sawyer, and Wurtsmith Air Force Bases, all in Michigan. Observing that four additional sites would have to be selected shortly if they were to be included in the FY 1960 MCP, Headquarters USAF waived its previously established requirement that Goose sites should be located north of 42 Degrees, 30 Minutes latitude, provided that operating locations could be selected which would provide sufficient decoy penetration in support of the EWP.[35]

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[33] DF's, Missile Div D/Ops to D/Compt, "Strategic Missile Monthly Progress Reports," Feb thru Jul 1958, filed in Mgt Analysis Div D/Compt, Hq SAC; Monthly Report, Hq 556th SMS, 25 Jul 1958, filed in Hist Div Archives, Hq SAC.

[34] Historical Study No. 70, Vol I, pp 32-33, filed in Hist Div Archives, Hq SAC.

[35] TWX, Hq USAF to CINCSAC, AFOOP-OP-U 56600, 13 Feb 1958, Exhibit 14.

Meanwhile, a Rand Corporation study was completed in February on hardening Goose sites. This study sought to determine the feasibility of providing greater operational flexibility for this weapon system by being able to establish a "hold" for Goose missiles, and to provide more selective integration of this weapon system with manned bomber waves.[36] A SAC war-game study completed in April, however, to determine the desirability of dispersing the Goose units to sites equipped with 48 missiles, and hardening the facilities to withstand 25 psi, led to the conclusion that dispersal and hardening were not feasible and that goose sites should not be located on SAC B-52 bases.[37] Headquarters USAF agreed.[38] Consequently, on 26 May it withdrew its approval of Goose on-base sites at Kinross, K. I. Sawyer and Wurtsmith Air Force Bases and authorized their resurvey to satellite Goose units around each of these bases.[39] On 4 June it formally established a new criteria for establishing Goose sites by directing SAC to amend paragraph 9A of its SM-73 Goose Operational Plan, then under revision, to read: "SM-73 units will be dispersed by squadrons and located on active USAF installations not considered priority targets,

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36. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 8 Apr 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

37. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 9 May 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

38. Interview, J. Van Staaveren, Historian with Maj L. R. Harvey, D/Plns Hq SAC, 21 Aug 1958.

39. TWX, Hq USAF to CINCSAC, AFOOP 51284, 26 May 1958, Exhibit 15.

or will be sited sufficiently remote from the support base to insure a separate target with neither susceptible to direct damage from a successful single weapon attack against the other." With the inclusion of this statement, Headquarters USAF also approved SAC's draft of its Revised Goose Operational Plan.[40]

A resurvey of Kinross, K. I. Sawyer and Wurtsmith Air Force Bases had not been completed by the end of June. Other areas surveyed but not selected during the reporting period included Suffolk County Air Force Base, Long Island, New York, Stewart Air Force Base, New York, L. G. Hanscom Air Force Base, Massachusetts, and a site about four miles from Presque Isle Air Force Base, Maine.[41] The first three Air Force bases were unsatisfactory for one or more of the following reasons: Existence of other high priority missions, no available land, dense population, overflight restrictions and civilian resistance. The site near Presque Isle was rejected because of the Snark mission given to that base and a desire by Headquarters USAF not to give it a hard core mission.[42]

In May, Headquarters USAF released 39 million dollars of FY 1959 funds for the Goose program to complete research and development, for an initial missile inventory, and for production tooling. The release of the funds was deemed significant by SAC in that it represented a turning point in the Goose program. It was the first money committed for the Goose weapon system beyond the research and development stage.[43] The production of Goose missiles, however, was not scheduled to begin until January 1960 and it would proceed initially at a slow rate. Production of 100 missiles per month would not be attained until September 1961.[44]

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[40] TWX, Hq USAF to CINCSAC, AFOOP-OC-B-3 51637, 4 Jun 1958, Exhibit 16 See also SACOP 3-58, SM-73 Goose, 1 Jul 1958, p 18, Exhibit 17.

[41] DF, Programs Div D/Plns to DE, Hq SAC, "Base Facilities SM-73," 13 May 1958, Exhibit 18.

[42] DF, Programs Div, D/Plns to DE, Hq SAC, "Base Facilities, SM-73," 13 May 1958, Exhibit 18; See p. 12.

The development of the J-83 Goose engine by the Fairchild Corporation, the prime contractor, continued to slip behind schedule during the early weeks of the reporting period. However, in March it appeared that "shotpeening" or metal strengthening of the compressor system would remedy the slippage problem. The first YJ-83 engine, initially scheduled for delivery in December 1957, and the YJ-85 engine, an alternate Goose engine, passed their 15-hour Preliminary Flight Rating Test (PFRT) in May. A fully rated J-83 engine with 2,450 pounds of thrust was not expected to complete its qualification test until March 1959. Development of the subsystem (i.e., the electronic package) was progressing in a satisfactory manner. The ECM configuration for

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43. DF, D/Ops to D/Compt, "Strategic Missile Monthly Report," 9 Jun 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

44. Memo, D/Plns to Gen Westover, Hq SAC, "Status of the SM-73 (Goose) Program," 24 Apr 1958, Exhibit 19.

all Goose Missiles desired by SAC would include an "S" band jammer, VHF jammer, a repeater, and chaff, including delayed opening chaff.[45]

Considerable impetus was given to planning for the Goose force when SAC completed and issued on 1 July a completely revised and detailed Goose Preliminary Operational Plan, replacing the Preliminary Operational Plan issued on 29 May 1957.[46] As has been noted, a major change in the plan required the dispersal of Goose squadrons, their establishment on active USAF installations not considered priority targets, and placed sufficient distance from a support base to preclude destruction of both the support base and the squadron by a single enemy weapon attack.[47] The plan also contained detailed annexes of wing, group and squadron unit manning documents, training, logistical maintenance and supply policies, and installation and communication requirements.[48] Manpower estimates indicated that approximately 308 military personnel would be needed to man a Goose squadron.[49] Refinements of the new Operational Plan could be expected, however, as the first Goose squadron was not scheduled to be activated until the third quarter of 1960, over two years from the end of the reporting period, June 1958.

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[45] *Ibid.*; DF's, D/Mat to D/Compt, "Monthly Reports on Strategic Missiles," 7 May 1958, 6 Jun 1958, 7 Jul 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

[46] Historical Study No. 70, Vol II, Exhibit 15, filed in Hist Div Archives, Hq SAC.

[47] See p. 17.

[48] SACOP 3-58 "SM-73 Goose Preliminary Operational Plan," 1 Jul 1958, Exhibit 17.

[49] Ltr, Hq USAF to Comdr 8th AF, "Construction Requirements and Personnel Strengths to Support SM-73 Goose Missile Squadron," filed in Central files DE, Hq SAC.

At the end of the reporting period Goose planning called for a 10-squadron Goose force. Sites for six of the ten squadrons had been selected and approved by Headquarters USAF and sites for four squadrons remained undetermined. The six approved sites, the squadrons to be assigned to each one, and the proposed activation and operational dates for the 10-squadron Goose force were as follows:[50]

	Site	Squadron	Operational Date	Activation Date
1.	Ethan Allen AFB	508th SMS	1/61	3/60
2.	Duluth AFB	510th SMS	2/61	4/60
3.	Otis AFB	511th SMS	3/61	1/61
4.	Kinross AFB	509th SMS	4/61	2/61
5.	Wurtsmith AFB	708th SMS	1/62	3/61
6.	K. I. Sawyer	709th SMS	2/62	4/61
7.	Unknown	710th SMS	3/62	1/62
8.	Unknown	711th SMS	4/62	2/62
9.	Unknown	724th SMS	1/63	3/62
10.	Unknown	725th SMS	2/63	4/62

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[50] DF, DE to Gen Westover, "SM-73 (GOOSE) Program, 26 Jun 1958, Exhibit 20.

Five Goose flight tests were conducted during the reporting period. A flight on 31 January, designed to study launching, stability, performance and reflectivity, ended after radio control was lost. The missile flew two hours and 18 minutes and attained a maximum altitude of 25,000 feet. The test was considered partially successful. During a very successful flight on 18 March a Goose missile flew in a race track pattern for four hours and 58 minutes at speeds of .4 to .88 Mach, reaching a maximum altitude of 49,000 feet. A third flight attempt on 18 April failed completely when the missile impacted on the beach and exploded. The fourth test on 15 May lasted about two and a half hours. It was designed to test dynamic stability and performance of the missile at 20,000 to 48,000 feet and to gather flutter and vibration data during a high speed dive to impact. Gyro control was lost, however, after two hours and 25 minutes of flight and the missile impacted. Nevertheless, the test was considered partially successful. The last flight test of the reporting period, on 18 June, failed because of booster ignition malfunctioning. Fuel expansion during the subsequent delay caused skin separation on each wing of the Goose, thereby requiring either a wing change or factory repair. The test of 18 June comprised the tenth Goose flight test since the tests began on 27 June 1957.[51]

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[51] DF's, D/Ops to D/Compt, "Strategic Missile Monthly Reports," Feb thru Jul 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC and in Hist Div Archives, Hq SAC; Historical Study No. 70, Vol I, p 34, filed in Hist Div Archives, Hq SAC.

THE WS-315A-1 THOR SM-75 AND THE WS-315A-2 JUPITER SM-78

High level Defense Department decisions of late 1957 which led to the establishment of an initial IRBM program consisting of four Thor and four Jupiter squadrons, and a general acceleration of the overall IRBM program,[52] required that SAC prepare new operational plans for both weapons systems. A completely revised Thor plan was issued on 25 February[53] and an initial Jupiter plan was issued 4 March.[54] Because the Thor weapon system was in the most advanced planning stage, SAC subsequently published a program schedule for each of the four Thor squadrons scheduled for deployment to the United Kingdom.[55] These documents, with their subsequent amendments and progress reports, provided the main guidelines for SAC's IRBM program during the first half of 1958.

In addition to the task of assuring that one Thor squadron and one Jupiter squadron would be operational and ready for deployment by December 1958, SAC was also deeply concerned about the problem of finding suitable IRBM sites in overseas countries

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52. Historical Study No. 70, Vol I, p 44ff, filed in Hist Div Archives, Hq SAC.

53. SACOP Plan 2-58 (SM-75), 25 Feb 1958, Exhibit 21.

54. SACOP Plan 1-58 (SM-78), 4 Mar 1958, Exhibit 22.

55. SAC Programming Plan 12-58, "SM-75 Program (Thor for Four RAF Squadrons)," 23 Apr 1958, Exhibit 23.

on the perimeter of the Soviet Union. The most promising negotiations, of course, were with the United Kingdom and these were continued during the period 20-24 January when a new USAF negotiating team, headed by Major General William H. Blanchard, Commander of the Seventh Air Division in the United Kingdom, met with a Royal Air Force (RAF) team again headed by Air Marshal Geoffery W. Tuttle, Deputy Chief of Staff of the RAF, to resume discussions on a U. S. - U. K. Technical Agreement. Many but not all basic issues were resolved during the January sessions. Agreement was reached to proceed with plans to establish four Thor squadrons in the United Kingdom in accordance with the following schedule:[56]

1. First squadron. Three missiles by July 1958, three missiles by September 1958 and nine missiles by the end of 1958.
2. Second squadron. To be deployed between 1 January and 30 June 1959.
3. Third squadron. To be deployed by 30 October 1959.
4. Fourth squadron. To be deployed by 31 March 1960.

Each squadron would be dispersed on five sites with three missiles on each site. One site would serve as the main base and four sites as satellite bases. Although a number of sites were provisionally agreed upon, they were still subject to detailed surveying.[57]

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[56] Draft Technical Agreement Between the United States Air Force and the Royal Air Force on the Establishment of Intermediate Range Ballistic Missile (SM-75 Thor) Based in the United Kingdom, undated, filed in Hist Div Archives, Hq SAC.

Negotiations were also under way, meanwhile, on the diplomatic level. On 22 February the Governments of the United States and the United Kingdom signed a ten-point memorandum of Understanding which broadly defined the responsibilities of each government with respect to IRBM sites, supplying equipment and ownership thereof, test firing and the use of IRBM's. Key points of the Memorandum contained the stipulation that the decision to launch missiles would be a matter for joint decision by the two governments in the light of circumstances at the time and with due regard to Article 5 of the North Atlantic Treaty, and that all nuclear warheads would remain in U. S. ownership, custody and control in accordance with U. S. law. The memorandum was subject to revision by mutual consent of the two governments and would remain in force for not less than five years. However, it could be terminated by either government upon six months' notice.[58]

Neither the draft Technical Agreement nor the Memorandum of Understanding touched on a basic issue then under study by

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57. Ibid.

58. U.S. - U.K. Memorandum of Understanding, 22 Feb 1958, Exhibit 24.

the British Government, namely, command and control of the IRBM units in the United Kingdom. This issue was clarified, however, on 3 March when Air Marshall Tuttle informed General Blanchard that the British Government had determined that it would have to exercise complete command and operational control over the 1st RAF Squadron. This basic decision promised to change SAC's plans to use its 672d Strategic Missile Squadron, activated on 1 January,[59] until sufficient RAF personnel were trained to man and operate the 1st RAF squadron. After studying the British decision, the Secretary of Defense determined that political considerations were overriding and that the United States had no choice but to accept the British viewpoint provided that the RAF gave adequate assurances to comply with those operational arrangements already in the Technical Agreement.[60] USAF - RAF discussions on the draft Technical Agreement continued intermittently until 26 June when General Blanchard and Air Marshall Tuttle signed the Agreement on behalf of their respective services. It reflected three basic changes from the earlier draft agreement: No annexes or other detailed instructions in supporting documents, no reference to the duration of the Technical Agreement (a point believed adequately dealt with in

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59. Historical Study No. 70, Vol I, p 59, filed in Hist Div Archives, Hq SAC, See p 12.

60. TWX, Hq USAF to CINCSAC, 13 Mar 1958, filed in D/Plns, Hq SAC.

the Memorandum of Understanding), and provisions for RAF operational control over all missile squadrons in the United Kingdom and for USAF personnel to be responsible for the maintenance of Missiles of the 1st RAF squadron only. This responsibility would be turned over to the RAF as rapidly as their personnel could be trained, probably about July 1959. The Technical Agreement also identified the sites for the first RAF squadron: Feltwell, North Pickenham, Shephards Grove, Tuddenham and Mepal. Sites for the second RAF squadron were also tentatively agreed upon.[61]

France was the next priority area, after the United Kingdom, desired by Headquarters USAF in which to place IRBM units. Unlike the negotiating arrangements with the Royal Air Force, USAF - French Air Force (FAF) negotiations would be conducted through SHAPE with Headquarters USAFE serving as the point of contact with the French Government. SAC was authorized direct liaison with SHAPE on all technical matters, and directed to provide appropriate IRBM technical advisors for SHAPE (under General Lauris Norstad) and for USAFE on site selection, training, personnel and skill requirements. Tentative plans called

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61. Ltr, Gen Blanchard to Gen Power, 26 Jun 1958, w/incls: U.S. - RAF Technical Agreement, 26 Jun 1958, Exhibit 25; Ltr, Hq SAC to COFS USAF, "IRBM Technical Agreement," 14 Jun 1958, filed in D/Plns, Hq SAC.

for a Jupiter squadron to be sent to France.[62]

On 29 April Major General Gabriel P. Disosway, Deputy Commander for Operations, USAFE was appointed to head the USAF team composed of representatives from the major commands. General Disosway was instructed to use the draft text of a proposed United States - French Agreement, passed by General Norstad to General Paul Ely, Chairman of the French Chiefs of Staff on 19 March, as the point of departure for his discussion. The FAF delegation was headed by Brigadier General Jacques Martin.[63]

Following a preliminary meeting in Ramstein, Germany, a full dress USAF - FAF conference was held in Paris from 12 to 16 May. The discussions were general and did not cover numerous subjects requiring separate NATO, SHAPE, USAFE or French action, or separate negotiations. It was apparent, however, that the subject of command and control over IRBM units would prove difficult. The FAF representatives indicated a desire to place their IRBM force under the French Bomber Command. The conference also revealed that the French were desirous of utilizing their tion, in time to meet the established IRBM schedule, prompted Headquarters USAF to consider Alaska.[68] Accordingly, a site survey team, composed of representatives of SAC, SAC MIKE and AFBMD surveyed the area around Fairbanks and Anchorage late in March and early in April. Conclusions reached by the team were that the Anchorage area was preferable because of more suitable highway and railroad facilities, and that Elmendorf and Ladd AFB's, except for family housing, had adequate facilities to support an IRBM squadron. Dispersed IRBM sites, however, would have to be located 30 to 35 miles from a support base. This fact, plus weather conditions and the long hours of darkness, would favor the use of a FIREHOUSE rather than an eight hour shift type of manning and operation in Alaska.[69] In May the Defense Department's Director of Guided Missiles, Mr. W. M. Holaday, authorized the deployment of a Jupiter squadron to Alaska provided deployment elsewhere failed.[70]

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[62] TWX, Hq USAF to CUSNMR Paris, CINCSAC, CINCUSAFE, (DOUGLAS TO NORSTAD), 26 Feb 1958, Exhibit 26.

[63] Memo for Record, USAF/FAF (JUPITER) Conferences, 5-16 May 1958, 2 Jun 1958, Exhibit 27.

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[68] Ltr, Maj Gen J. Smart, USAF to CINCSAC, "IRBM Deployment Plans," 12 Mar 1958, Exhibit 28; Memo, Secretary of the Air Force to the Secretary of Defense, "Future Deployments of the Intermediate Range Ballistic Missile," 27 Mar 1958, Exhibit 29.

[69] Memo for Record, FS&W Br, D/Plns, Hq SAC, "Site Survey Visit to Alaska for IRBM Deployment Sites," 4 Apr 1958, Exhibit 30.

[70] Memo, Mr. W. M. Holaday, to the Secretary of the Air Force, "Future Deployments of Jupiter IRBM Squadrons," 9 May 1958 Exhibit 31.

CINCSAC, However, entertained strong reservations about deploying a Jupiter squadron to Alaska and believed that to do so would be a grave mistake. He recommended that it be deployed to Italy, in lieu of France, and if deployment to either place was impossible, not to deploy it at all. He favored placing only a Thor unit in Alaska in accordance with the established time schedule (1960-61) to preclude initiation of a crash construction program with inadequate deployment planning.[71] Nevertheless, Headquarters USAF directed on 4 June that action be taken to design technical facilities for an IRBM squadron in the Elmendorf area to insure IRBM deployment there by December 1958. Facilities were to be placed in a soft, austere, Thor configuration on existing Air Force property but were to remain capable of accommodating a Jupiter squadron if necessary.[72] Details relative to designing the technical facilities were being worked out in June.

Other areas under consideration by Headquarters USAF during the reporting period for the deployment of either Thor or Jupiter squadrons included Spain, Okinawa, and Turkey.[73] Except for the deployment of four Thor squadrons to the United Kingdom, the exact location of additional IRBM units remained contingent upon the success of U. S. diplomatic negotiations with other countries. The future of the entire IRBM program, in fact, was dependent upon the ability of the United States to secure timely IRBM agreements with NATO members or other nations. This lack of diplomatic progress had developed into a formidable problem by the end of June.[74]

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[71] TWX, CINCSAC to COFS USAF, C-6295, 27 May 1958, Exhibit 32.

[72] TWX, Hq USAF to AFBMD ARDC, AFOIE-CS AC 51677, 4 Jun 1957, Exhibit 33.

[73] Ltr, Department of the Air Force to CINCSAC, "IRBM Deployment Plans," 12 Mar 1958, Exhibit 28; TWX, Hq USAF to CINCSAC, 9 Jun 1958, filed in D/Plns, Hq SAC.

Uncertainty over timely deployments of IRBM units was also caused during the reporting period by continued slowdowns in the planned Jupiter operational program. Although Army military leaders, notably Lieutenant General James M. Gavin and Major General John B. Medaris, testified before the Senate Preparedness Investigating Subcommittee in January 1958 that the first operational Jupiter unit (the 864th Strategic Missile Squadron) "unquestionably" would be ready for deployment by December 1958,[75] the progress of the Jupiter research and development program in subsequent weeks did not support their confidence. A special report prepared by Major General Bernard A. Schriever, Commander of the AFBMD, late in March, and forwarded by SAC MIKE to CINCSAC, indicated that over one half of the IOC configuration Jupiter missiles scheduled for testing during CY 1958 would not be in support of the Jupiter program but would be devoted to other purposes (such as photo reconnaissance, satellites and lunar probes). It appeared that the Army would be able to test flight only two Jupiter missiles with an operational configuration prior to the deployment of the 864th Strategic Missile Squadron, a circumstance that SAC MIKE believed could embarrass the Air Force which had operational responsibility for the Jupiter weapon system.[76] In addition, there was slippage in the Jupiter training program because of the elimination of Redstone training, slippage in the number of Jupiter trainers needed, and lack of GSE and missile support items. During June SAC noted that Chrysler Corporation, the prime contractor for the Jupiter, still had very little failure data on equipment, and that drawings were not available on some items. Without the failure data, the drawings and hardware, adequate provisioning for the Jupiter weapon system was not possible.[77]

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[74] Interview, J. Van Staaveren, Historian with Lt Col C. M. Hillstrom, Chief, Future Weapons Section, D/Plns, Hq SAC.

[75] Senate, Hearings Before the Senate Preparedness Investigating Subcommittee, 85th Congress, Second Session, Part II, pp 1509; 1689, filed in Hist Div Archives, Hq SAC.

Also unresolved during the reporting period were the Air

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76. Ltr, SAC MIKE to CINCSAC, 4 Apr 1958 with attached ltr, Gen Schriever to COMDR ARDC, "Jupiter," 29 Mar 1958, Exhibit 34.

77. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 3 July 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

Force and Army negotiations on an agreement on funding for and reimbursement of logistical support for SAC units at the Redstone Arsenal, Huntsville, Alabama. A draft agreement had been under negotiation since January 1958.[78]

The manifold problems and uncertainties surrounding the IRBM program made it difficult for SAC to secure official approval of an IRBM force larger than the four Thor and four Jupiter squadrons approved late in 1957. In March, Headquarters USAF proposed to the Defense Department a 16-squadron IRBM program consisting of 12 Thor and four Jupiter squadrons.[79] An Air Force and Defense Department conference on 22 April, however, resulted in a tentative agreement on a 12-squadron program consisting of nine Thor and three Jupiter squadrons. The Thor program would be accomplished within a production rate of eight missiles per month and squadrons would be deployed to the United Kingdom, Italy, Turkey, Alaska and Okinawa. The three Jupiter squadrons would be deployed to France.[80] As has been noted, however, a firm overseas IRBM . . .

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[78] Ibid.

[79] Ltr, Department of the Air Force, to CINCSAC, "IRBM Deployment Plans," 12 Mar 1958, Exhibit 28.

[80] Memo, W. M. Holaday to Secretary of the Air Force, 25 Apr 1958, Exhibit 35; Memo for Distribution, Office of Assist CofS for Guided Missiles, "Revised IRBM Programs," 1 May 1958, Exhibit 36.

deployment schedule, with the exception of the four Thor squadrons destined for the United Kingdom, had not been developed by the end of June. As a consequence, the Defense Department continued to hold in abeyance final approval of an enlarged 12-squadron IRBM program.[81]

The reporting period witnessed several changes in IRBM unit assignments and designations, and one wing activation. The 864th Strategic Missile Squadron (Jupiter) which was initially assigned to the 1st Missile Division,[82] was further assigned to the 704th Strategic Missile Wing at Cooke AFB effective 23 February 1958.[83] The British decision to retain command and operational control over all of its Thor units resulted in a major change in the functions of the 672nd Strategic Missile Squadron which had been scheduled to serve as the first IRBM unit in the United Kingdom.[84] Redesignated the 672d Technical Training Squadron, it was relieved from assignment to the 704th Strategic Missile Wing at Cooke AFB and reassigned to the 705th Strategic

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81. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 7 Jul 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.
82. Historical Study No. 70, Vol I, pp. 59-60.
83. GO 12, Hq SAC, 11 Mar 1958, Exhibit 37.
84. Historical Study No. 70, Vol I, pp. 59-60.

Missile Wing effective 20 May.[85] The 705th Wing had been activated on 20 February at RAF station, Lakenheath, United Kingdom, and was placed under the command of the Deputy Commander of the Seventh Air Division.[86]

Both Thor and Jupiter flight testing continued during the reporting period. Six Thor launchings were made on the following dates:[87]

28 January
28 February
19 April
23 April
4 June
13 June

The test on 28 February was for the purpose of testing a General Electric Model 1B nose cone for separation and re-entry. It was only partially successful as the nose cone was belatedly released at about 250,000 feet and impacted 154 NM down range. Two more successful separation and re-entry tests were conducted on 4 June and 13 June with the test on the latter date marking the first successful re-entry of a General Electric Mark II nose

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85. GO 33, Hq SAC, 25 June 1958, Exhibit 38.

86. GO 13, Hq SAC, 12 Mar 1958, Exhibit 39.

87. DF's, Missile Div, D/Ops to D/Compt, "Monthly Strategic Missile Report," Feb thru Jul 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

cone, subsequently recovered by ship. The first Thor-Vanguard (Project Able) flight was conducted on 23 April but was only partially successful. A launching attempt on 19 April proved completely unsuccessful when the missile was destroyed on the launch pad. The flight of 13 June represented the 16th launching attempt of Thor missiles since the tests began on 25 January 1957.[88]

Of the five Jupiter launchings conducted during the same period only two contributed to testing components of an operational missile. A Jupiter A missile, launched on 14 January, was for research purposes to support Project Hardtack which sought to determine the feasibility of making a thermonuclear detonation at 125,000 feet altitude. A launching on 18 May was conducted primarily to test the possibility of recovering a full scale ablation type nose cone over a range of about 1,300 NM. Actual impact was 20 NM short and 10 NM right of the predetermined impact point. The nose cone recovery package operated properly and was picked up shortly after the test.[89]

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88. Ibid.

89. Ibid.

Three other Jupiter launchings were for the purpose of placing satellites into orbit. On 31 January, an elongated Redstone frame combined with a North American 75,000 pound thrust engine (Jupiter C) placed America's first satellite, Explorer I, into orbit. A second launching attempt on 5 March failed, but on 26 March another Jupiter C missile successfully launched Explorer III.[90]

THE WS-107A-1 ATLAS SM-65 AND THE WS-107A-2 TITAN SM-68

Following Headquarters USAF's approval of a nine squadron Atlas and a four squadron Titan program late in 1957,[91] SAC prepared new and separate operational plans for each weapon system. A new Atlas Operational Plan[92] and a new Titan Operational Plan[93] were issued on 15 May and 11 June, respectively. The fluid state of the ICBM program, however, indicated that there would be considerable revision of both plans in subsequent months.

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[90] Ibid.; Clip File, Hist Div Archives, Hq SAC.

[91] Historical Study No. 70, Vol I, pp 69-70, filed in Hist Div Archives, Hq SAC.

[92] SACOP Plan 7-58, 15 May 1958, Exhibit 40.

[93] SACOP Plan 8-58, 11 Jun 1958, Exhibit 41.

The problems of ICBM boundaries and of dispersal of ICBM units occupied much of the attention of SAC during the reporting period. With respect to the first problem, it will be recalled that the geographical boundaries for ICBM units, originally approved by Headquarters USAF, were limited to the area in North Central United States and South Central Canada lying generally between the Rocky Mountains and the Great Lakes. ICBM siting plans envisaged four missile squadrons to a group, two to three groups to a wing. Missile squadrons would be deployed within a 30-mile radius of a support base and missile groups within a 100-mile radius of a wing.[94] The establishment of any ICBM base on or adjacent to SAC operational bases was initially deemed undesirable by CINCSAC on the premise that a combined manned bomber and ICBM base would contravene the dispersal concept and provide too lucrative a target for an enemy.[95]

That the foregoing policy would be changed became evident late in 1957 when the Secretary of the Air Force directed that

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94. Historical Study No. 65, Vol II, Exhibit 2, filed in Hist Div Archives, Hq SAC; Memo from DPLC to Col Lyle, D/Plns, Hq SAC, "Summary of ICBM Site Selection Activities," 7 Feb 1958, Exhibit 42.

95. TWX, CINCSAC to COFS USAF DPL 7250, 7 Nov 1957, Exhibit 43.

Air Force bases should be utilized for the ICBM program wherever possible. He warned that any deviation from this rule would require considerable justification.[96] This decision, plus SAC's growing awareness of ICBM siting problems with their variant and sometimes incompatible requirements which included low constrution costs, a booster impact area, adequate base and communications support, dispersal needs, "hardened" sites, and adequate troop and family housing, led to a general reappraisal of some of the original ICBM siting concepts.

On the basis of recommendations made by his Director of Installations,[97] and as a result of long range planning exercises, CINCSAC recommended to Headquarters USAF early in 1958 that the geographical limits for ICBM units be expanded and that the United States be considered in Category I and Canada in Category II.[98] Headquarters USAF only partially agreed with CINCSAC's recommendations. It extended the ICBM geographical boundary further south and indicated that any requests for ICBM

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96. Historical Study No. 70, Vol I, p 74, filed in Hist Div Archives, Hq SAC.

97. DF, DE to D/Plns, Hq SAC, "Site Selection - ICBM," 26 Dec 1957, Exhibit 44.

98. TWX, CINCSAC to COFS USAF DPLBC 1033, 25 Jan 1958, Exhibit 45.

bases outside of the newly defined area[*] would be considered separately.[99] The redefined boundary was still valid at the end of June.

With respect to the problem of ICBM site selection, a considerable departure from original siting concepts was suggested on 31 January when CINCSAC asked his staff whether any thought had been given to placing ICBM squadrons on SAC tactical bases as part of the SAC force. He proposed establishing a squadron adjacent to a SAC base so as to not detract from the dispersal concept, yet obtain the benefits of the existing base support facilities.[100] CINCSAC's suggestion led to a staff study of the matter which concluded that a "single squadron concept" might prove feasible for the ICBM program. It was approved at a meeting of the SAC Master Planning Board on 19 February.[101]

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[*] The new ICBM boundary was defined as extending from 87 degrees west and the State of Michigan north of 42 degrees, 30 minutes north 114 degrees west with the southern boundary extended by a line from 39 degrees north - 114 degrees west intersection to the 31 degree north - 103 degree west intersection to the 39 degree north - 87 degree west intersection.

[99] TWX, Hq USAF to ALLMAJCOMS, AFOOP 57755, 7 Mar 1958, Exhibit 46.

[100] DF, D/Plns to all Directorates, "Location of Strategic Missile Units on SAC Bases," 3 Feb 1958, Exhibit 47.

[101] DF, Programs Div, D/Plns to DE, Hq SAC, "Site Selection," 19 Feb 1958, filed in D/Plns, Hq SAC.

Air Staff initial reaction to the single squadron concept was qualified. Although they favored adequate dispersal of ICBM sqadrons, the Air Staff was reluctant to permit the use of strategically vital B-52 and KC-135 bases for use as ICBM sites, favoring instead the use of B-47 bases scheduled for early phase out.[102] SAC representatives thoroughly briefed the Air Staff and the Air Force Ballistic Missile Committee during the period 12-13 March on the single squadron concept, and simultaneously recommended that the next two Atlas squadrons be established at Fairchild Air Force Base, Washington and Offutt Air Force Base, Nebraska. Meanwhile, CINCSAC personally urged the Air Staff to approve the single squadron concept, emphasizing that it would permit SAC to capitalize on the maximum use of Air Force base facilities, communication networks, and support organizations, and that it would prevent any overextension of base capacities such as might occur under the previous ICBM siting concept requiring four squadrons around an Air Force support base. He also observed that this concept would provide a nucleus for future missile area buildups commensurate with the mission of the support base.[103]

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102. TWX, Hq USAF to ALLMAJCOMS, AFOOP 57755, 7 Mar 1958, Exhibit 46.

103. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 7 May 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC; TWX, CINCSAC to COFS USAF, 11 Mar 1958, Exhibit 48.

the Titan configuration called for hardened sites up to 100 psi with studies continuing on hardening sites beyond this strength. Only a moderate degree of dispersal was contemplated for both weapon systems, thus providing a single aiming point for the enemy.[106]

Late in 1957, SAC and AFBMD jointly were considering increasing the number of launchers per squadron for the Atlas system but without intra-squadron dispersal. However, on 10 March Headquarters USAF directed both commands to study the feasibility of adopting an intra-squadron dispersal and a partial hardening (5 to 15 psi) concept for the Atlas force to insure at least two aiming points, and a hardened (100 psi) and intra-squadron dispersal concept for the Titan force to insure at least three aiming points. Headquarters USAF believed that these changes in ICBM configurations would insure greater survivability for ICBM units.[107]

On the basis of the initial conclusions reached by the SAC - AFBMD studies, the Air Force Ballistic Missile Committee on 2 April directed that the intra-squadron concept for the Atlas be adopted to provide two additional aiming points. It

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106. Historical Study No. 70, Vol I, pp 74-78, filed in Hist Div Archives, Hq SAC.

107. TWX, Hq USAF to CINCSAC, SAC MIKE, AFBMD, AFOOP 57778, 10 Mar 1958, Exhibit 49; TWX CINCSAC to COFS USAF, DPL 3657, 26 Mar 1958, Exhibit 50.

simultaneously ordered that construction work beyond the first squadron at Francis E. Warren Air Force Base, Wyoming be held in abeyance pending the final outcome of the configuration study.[108]

The revised configuration concept was presented to the AFBMC by a joint SAC/AFBMD briefing team on 17 April. The Committee approved the concept but the Air Staff added the proviso that the revised Atlas configuration would have to be implemented within the cost limitations of about $76,000,000, and manpower limitations of not more than ten percent over existing manning documents which provided for about 620 personnel spaces per squadron.[109] Highlights of changes in the Atlas configuration were as follows:[110]

1. The intra-squadron dispersal concept would be implemented beginning with the second squadron at Francis E. Warren Air Force Base, Wyoming. This concept would provide three complexes or aiming points with each complex containing three launchers, a block house, and a guidance station (known as a 3x3 configuration). These changes would increase the number of launchers per squadron from six to nine, and the number of guidance stations from two to three.

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108. TWX, Hq USAF to ARDC, AFCGM 59020, 3 Apr 1958, filed in D/Plns Hq SAC; Study, "SM-65 Atlas Configuration Study Actions, 2 Apr - 1 May 1958," 28 Apr 1958, Exhibit 51.

109. Ibid.

110. Ibid.; D/Plns to all Directorates, Hq SAC, "SM-65 (ATLAS) Concepts and Requirements," 21 Apr 1958; TWX, Hq USAF to ALLMAJCOMS, AFCGM 59977, 24 Apr 1958, filed in D/Plns, Hq SAC.

2. The squadron UE of 10 missiles would be retained. Spares, if required, would be provided at a later date.

3. An all-inertial guidance system for Atlas missiles would be introduced beginning with the fifth Atlas squadron scheduled to be placed at Fairchild Air Force Base, Washington.

4. Facilities should be protected to withstand 25 psi of overpressure beginning with the fifth Atlas squadron at Fairchild Air Force Base, Washington.

5. A simplified, centralized maintenance concept to support the 3x3 configuration should be adopted. (This was CINCSAC's decision and represented a change from past staff decisions).[111]

Headquarters USAF simultaneously directed that the approved nine squadron Atlas program also be revised to reflect the following squadron operational dates:[112]

Unit	Location	Operational Date
576th SMS	Cooke AFB	June 1959
577th SMS	Warren AFB	May 1960
578th SMS	Warren AFB	July 1960
579th SMS	Offutt AFB	November 1960
580th SMS	Fairchild AFB	February 1961
581st SMS	Undetermined	April 1961
582nd SMS	Undetermined	June 1961
583rd SMS	Undetermined	August 1961
584th SMS	Undetermined	November 1961

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111. Memo, D/Plns to Gen Westover, "SM-65 Configuration," 28 Apr 1958, filed in D/Plns, Hq SAC.

112. TWX, Hq USAF to ALLMAJCOMS, AFCGM 59977, 24 Apr 1958, filed in D/Plns, Hq SAC.

Compared with the Atlas schedule approved in December 1957, the revised schedule would result in a delay in making operational the first three squadrons, no change in the date for the fourth squadron, and earlier operational dates for the last five squadrons with the ninth squadron becoming operational one year earlier than previously scheduled.[113]

By June the major problem confronting SAC in implementing the revised Atlas configuration were funding and manpower. As has been indicated, the estimated dollar cost of an Atlas squadron (at Francis E. Warren AFB) was $76,000,000 and manpower requirements were estimated at 610 personnel. Initial estimated cost of the revised Atlas configuration was placed at $100,000,000 and manpower requirements estimated at 963 personnel. In an effort to scale down both the dollar and manpower requirements, a Cost Reduction Board was formed at the end of April composed of representatives of SAC MIKE, AFBMD and BMD to make a detailed review of where reductions could be made. By the end of the reporting period some substantial reductions had been made, but it was evident that further decreases in dollar and manpower requirements would be achieved only with the greatest difficulty.[114]

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113. Historical Study No. 70, Vol I, p 70, filed in Hist Div Archives, Hq SAC.

114. DF, D/Plns to D/Compt, "Strategic Missile Monthly Report," 9 Jun 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

of the 1st Missile Division would not insure effective peacetime control. Accordingly, General Wade proposed establishing small, streamlined, intermediate headquarters between ICBM squadrons and itself. These headquarters would be similar to a SAC air division, be concerned only with operations and training, be manned by about 50 officers and airmen, and control three to four ICBM squadrons which would report directly to the 1st Missile Division. General Wade believed this type of organization and method of command control would permit primary effort on mission accomplishment, save considerable military spaces, reduce overhead costs, and provide strong command management. He proposed to begin implementation of this concept by patterning the 704th Strategic Missile Wing at Cooke AFB after a small SAC Air Division.[127]

CINCSAC was briefed on this concept on 29 May. He indicated that he had an open mind about the subject and requested that it be wargamed first and that further recommendations be submitted based on wargaming results.[128] Final recommendations had not been presented to him by the end of June.

Five Atlas flight tests were attempted during the reporting period. On 10 January an Atlas missile was flown 550 NM

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127. TWX, Comdr 1st Missile Div to CINCSAC, DPL-6-5088, 30 May 1958, filed in Hist Div Archives, Hq SAC.

128. Ibid.

to evaluate fire elimination changes and the autopilot. The results were successful. Three subsequent tests on 7 February, 20 February and 5 April, however, were unsuccessful with each missile exploding after over 100 seconds of flight. It was believed that a faulty turbine pump was the principal reason for the malfunctionings. As a consequence, further testing of Atlas missiles was halted until a complete check and the necessary changes could be made. After an elapse of about two months another test flight was conducted on 3 June and a missile flown 485 NM with excellent results.[129] This flight comprised the eighth Atlas test since the first launching was conducted on 11 June 1957.[130] Flight testing of Titan missiles was scheduled to begin late in 1958.[131]

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129. DF's, D/Ops to D/Compt, "Progress Report on Strategic Missiles," Feb thru Jul 1958, filed in Mgt Analysis Div, D/Compt, Hq SAC.

130. Historical Study No. 70, Vol I, p 81, filed in Hist Div Archives, Hq SAC.

131. Interview, J. Van Staaveren with Lt Col C. M. Hillstrom, Chief, Future Weapons Section, FS&FW Br, D/Plns, Hq SAC, 5 Aug 1958.

Chapter II

AIR-TO-SURFACE MISSILE WEAPON SYSTEMS

THE WS-112A RASCAL GAM-63

As a result of an earlier decision, only one squadron of B-47 aircraft was scheduled to be equipped with RASCAL air-to-surface missiles. By the end of 1957, considerable missile testing and crew training activity was under way preparatory to phasing the 445th Bomb Squadron (M) of the 321st Bomb Wing (M) at Pinecastle AFB, Florida into the RASCAL program.[132]

During the reporting period the planned operational date for the 445th Bomb Squadron (M) slipped three months, from September to December 1958, primarily because of delays in funding and constructing RASCAL facilities at Pinecastle AFB, and because of unsatisfactory progress in the Equipment and Suitability Testing (E&ST) phase of the RASCAL program.[133] Congressional approval of about $1,800,000 for RASCAL facilities was obtained in February (although Headquarters USAF subsequently authorized only $1,600,000 in expenditures), and a construction

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132. Historical Study No. 70, Vol I, Chap II, filed in Hist Div Archives, Hq SAC.

133. SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL), 10 Jan 1958, Exhibit 56; Amendment No. 1, 28 Mar 1958 to SACOP 3-58, "Final GAM-63 (RASCAL) Operational Plan," 12 Aug 1958, filed in Hist Div Archives, Hq SAC.

contract was awarded on 2 April.[134] Facilities to be constructed were outlined in an installations plan prepared by SAC's Directorate of Installations.[135] This delay in beginning construction precluded the 321st Bomb Wing from receiving any RASCAL missiles prior to December 1958.[136]

Following the termination of the research and development phase of the RASCAL program on 31 October 1957,[137] the E&ST phase had been scheduled to begin. Delays in getting this part of the testing program under way also contributed to slippage in the RASCAL program with the result that the planned completion date for the E&ST phase was changed from 31 August to 30 November 1958. After numerous captive flight tests late in 1957 and early in 1958, E&ST activities officially began on 17 February 1958 when a crew of the 445th Bomb Squadron successfully launched a RASCAL missile for the first time. It was released at an altitude of 35,000 feet at a speed of Mach .72, about 72 miles from its target. Durings its

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[134] Progress Report #1 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL), 28 Feb 1958, Exhibit 57; Progress Report #2 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL), 14 May 1958, Exhibit 58.

[135] GAM-63 (RASCAL) Installation Plan, 2 Apr 1958, prep by DE, Hq SAC, Exhibit 59.

[136] TWX, 321st BW to CINCSAC, DML 037, 18 Apr 1958, filed in D/Plns, Hq SAC.

[137] Historical Study No. 70, Vol I, p 95, filed in Hist Div Archives, Hq SAC.

245 seconds of flight the RASCAL attained a maximum altitude of 65,000 feet and impacted about 1,100 feet left of the target.[138] Two subsequent launches proved unsuccessful and two others had to be cancelled for various reasons. Carrier aircraft difficulties, lack of tanker support, and a variety of missile maintenance difficulties hindered the E&ST phase of the program. Headquarters Second Air Force attributed the slippage in E&ST activities primarily to the unsatisfactory condition of the RASCAL missiles that were received. By the middle of May, 17 of the 20 RASCAL missiles scheduled for the E&ST program remained to be launched.[139]

By the end of the reporting period it had been determined by the Air Proving Ground Command at Eglin AFB, Florida that the E&ST phase of the RASCAL program should continue in Category II in accordance with a revised weapons testing criteria issued by General Curtis E. LeMay, Deputy Chief of Staff, Headquarters USAF, on 7 April. (Under this criteria, Category I was primarily a contractor testing effort with continuous Air Force participation and evaluation, Category II a joint contractor—Air Force effort during

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138. Memo for Record, "GAM-63 Weapon System Phasing Group Meeting," 26 Feb 1958, prep by Missiles Br, Constr Div, DE, Hq SAC, Exhibit 60.

139. Progress Report #1 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL)," 28 Feb 1958, Exhibit 57, Progress Report #2 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL), 14 May 1958, Exhibit 58.

which period the Air Force became predominant as the user, and Category III an Air Force effort wherein the weapon was evaluated under operational conditions to determine its utility and integration if desirable, into the user's inventory.[140]

The modification schedule for 20 B-47 aircraft of the 445th Bomb Squadron also slipped from September to December 1958 during the reporting period. Although five aircraft had previously been modified to a RASCAL configuration (DB-47's) further changes on these aircraft were required. In March, the Oklahoma City Air Materiel Area (OCAMA) established a B-47 conversion schedule providing for the modification of 18 aircraft during the period August to December. Two additional aircraft would eventually be inherited by the 445th Bomb Squadron from the operational test center at Eglin AFB, thus insuring a total of 20 DB-47 aircraft bearing the RASCAL configuration.[141]

Training of RASCAL crews was continuing at the end of June. An initial combat rating for a RASCAL crew was given on 17

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[140] Minutes of the GAM-63 Weapon System Phasing Group Conference Held at Eglin AFB, Florida, 10 Jul 1958, filed in D/Plns, Hq SAC; Ltr, Gen LeMay to CINCSAC, 7 Apr 1958, Exhibit 61.

[141] History of 321st Bomb Wing (M), Mar 1958, filed in Hist Div Archives, Hq SAC; Progress Report #2 on SAC Programming Plan 3-58, "DB-47/GAM-63 Integration Program (RASCAL), Exhibit 58.

February. In March, RASCAL training took precedence over all other types of training within the 321st Bomb Wing (M). A total of 20 crews had to be trained by the end of 1958. Some concern was felt by the wing during the reporting period about its capability to fulfill its EWP mission while diverting aircraft and manpower to the RASCAL program.[142]

Other significant changes in the RASCAL program during the reporting period included decisions to integrate the 445th Bomb Squadron into SAC's ready alert concept when the squadron became operational and to delete an earlier prestrike stage requirement for the squadron. In view of the latter decision, multiple air refuelings would be required to enable RASCAL equipped aircraft to perform their assigned missions. Support requirements for the DB-47 aircraft and RASCAL missiles would be accomplished only at the home base.[143]

THE WS-131B HOUND DOG GAM-77

Initial operational planning for the Hound Dog air-to-ground missile called for equipping the first B-52 squadron by mid-1961.[144]

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142. *Ibid.*

143. Change No. 1, 21 Mar 1958 to SAC Programming Plan "DB-47/GAM-63 Integration Program (RASCAL), 10 Jan 1958, Exhibit 56.

144. Historical Study No. 70, Vol I, p 98, filed in Hist Div Archives, Hq SAC.

During January, however, representatives of the North American Aviation, Inc., and the Boeing Aircraft Company proposed to Headquarters USAF, SAC, ARDC and other Air Force agencies an accelerated Hound Dog program that would permit equipping the B-52 force with Hound Dog missiles by early 1960.[145] In conveying his approval of the proposed accelerated program to Headquarters USAF, CINCSAC specifically recommended:[146]

1. Acceleration of Hound Dog research and development (as had been proposed).

2. Incorporation of the Hound Dog capability by production line methods in the last 101 B-52G model aircraft (as had been proposed).

3. For planning purposes, retrofiting B-52E, F and G model aircraft (totaling 343) but leaving to a subsequent decision possibility of retrofiting B-52C and D model aircraft.

Observing that the results of the 1965 war gaming exercise and SAC/IAWR studies would be available by mid-1958, and that B-52 IRAN and modification programs would have to be extrapolated to cover the retrofit period, CINCSAC further recommended that detailed decisions on Hound Dog production go-ahead dates, rate of production, quantity and related matters be delayed until these studies were concluded and available.[147]

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[145] TWX, COMDR DET 1 ARDC WPAFB to CINCSAC, 24 Jan 1958, Exhibit 62.

[146] Joint Msgform, CINCSAC to COFS USAF, 31 Jan 1958, Exhibit 63.

After many weeks of detailed review of the manifold factors related to the Hound Dog program, the Air Staff in April approved plans to begin Hound Dog production in October 1959, to begin initial equipping of a B-52 squadron during the last quarter of CY 1959, and to insure an initial Hound Dog operational capability by May 1960.[148] In May, headquarters USAF formally approved a revised and more detailed operational schedule for a Hound Dog equipped 20-squadron B-52 force. The operational dates for each squadron location were listed as follows:[149]

FY 4/60	Loring, Griffiss
FY 1/61	Dow, Ramey, Seymour-Johnson
FY 2/61	Eglin, Beale, Travis
FY 3/61	Mather, Wurtsmith, Walker, Carswell
FY 4/61	Altus, Barksdale, Columbus, Clinton-Sherman
FY 11/62	Amarillo, Sheppard, Blytheville, Kinross

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147. *Ibid*

148. DF, D/Plns to DPLBC, Hq SAC, "Warhead Requirements," 18 Apr 1958, filed in D/Plns, Hq SAC.

149. TWX, Hq USAF to CINCSAC, AFOOP-OP-U 51091, 21 May 1958, Exhibit 64.

Headquarters USAF also stated that weapon system operational evaluation and testing of the Hound Dog would be conducted by the 301st Bomb Squadron (H) at Eglin AFB beginning FY 2/60, and that construction would be included in the appropriate MCP's to insure completion of the required facilities to meet the foregoing operational schedule.[150]

In transmitting the foregoing schedule to each of his numbered Air Forces, CINCSAC stated that Hound Dog equippage of B-52 units would be performed about three months prior to the planned operational dates. He also asked each numbered Air Force to prepare a consolidated report on available existing facilities at each B-52 base to accommodate Hound Dog maintenance and assembly functions.[151]

The facility reports from each numbered Air Force and discussions concerning them had not been completed by the end of June.[152] One important aspect of this problem was concerned with the possibility of combining Quail and Hound Dog maintenance facilities on B-52 bases, a subject that had been under study since early in 1958.[153] Planning in this area was particularly

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150. Ibid.

151. TWX, CINCSAC to 2nd, 8th, 15th AFs, DEDP 6338, 29 May 1958, Exhibit 65.

152. Central Files DE, Hq SAC, "HOUND DOG GAM-77", n.d.

153. DF, D/Ops to D/Instls Eng, "GAM-72 and 77," 25 Feb 1958, Exhibit 66.

complex because of the need for special warhead storage and installation facilities for Hound Dog missiles, a requirement which promised to add to the handling, towing, checking out and related operations connected with air-to-surface weapons. By the end of the reporting period, however, Headquarters USAF had delegated to ARDC the responsibility for combining the maintenance facilities. A contract was signed on 24 June with Nottingham and Associates to prepare design criteria and definitive facility drawings. Functional areas to be combined included administration, supply, T. O. files, tool cribs, heating and utility room, engine shops, generator room, latrine and locker rooms, and utilities. The criteria for combining the facilities had been prepared by North American Aircraft, Inc., and the Ralph M. Parsons Company. The preliminary criteria and definitive drawings were scheduled to be submitted to ARDC on 14 July for review. A final report was expected to be delivered ten days after Air Force comments thereon were submitted to the contractor.[154]

A draft USAF Preliminary Operational Concept for the Hound Dog weapon system, begun in 1957,[155] was completed in February and distributed to all SAC directorates for comment.[156] The final USAF Preliminary Operational Concept was issued on 13 June.[157] Meanwhile, SAC staff agencies were busily engaged in developing a Preliminary Operational Plan based on the Concept. A SAC draft Plan, submitted to Headquarters USAF in June,[158] was expected to be approved in July.

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[154] DF, DEDPL to DE Hq SAC, "GAM-77 (HOUND DOG) Critical Review and Combination of GAM-72 (QUAIL) and 77 (HOUND DOG)," 1 Jul 1958, filed in Central Files, DE, Hq SAC.

[155] Historical Study No. 70, Vol I, pp 97-98, filed in Hist Div Archives, Hq SAC.

THE WS-122A QUAIL GAM-72

After experiencing many months of difficulties in developing a J-85 General Electric engine for the Quail decoy missile,[159] a successful preliminary flight rating test (PFRT) was achieved with a 2,250 pound thrust engine in March. Although this engine produced less thrust than desired and would assure only a 250 NM rather than a 350 NM range for the Quail air-to-surface missile, Headquarters USAF approved its use, after completion of research and development, for a limited number of production type missiles sufficient to equip two B-47 squadrons. There was expectation

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156. Draft Preliminary Operational Concept for the GAM-77 Hound Dog, 5 Feb 1958, filed in Central Files DE, Hq SAC.

157. File, "GAM-77 HOUND DOG," 1958, filed in D/Plns, Hq SAC.

158. Ltr, Hq SAC to Hq USAF, "GAM-77 Operational Plan," 13 Jun 1958, filed in Central files, DE, Hq SAC.

159. Historical Study No. 70, Vol I, p 108, filed in Hist Div Archives, Hq SAC.

that a stronger engine, a J-85-3 with 2,450 pounds of thrust, would qualify at an early date and be incorporated into production missiles through a model improvement program.[160]

Early in April USAF programming documents called for 17 B-47 wings and 9 B-52 wings to be Quail equipped by 1962. However, the results of war gaming exercises during the early months of 1958 prompted SAC to re-examine the desirability of equipping B-47 units with Quail decoys prior to equipping B-52 units. A major consideration was the prospect of a relatively early phase-out for B-47 aircraft. In addition, SAC had to take cognisance of Quail missile availability dates, light weight weapon dates, B-47 locations, and the size of weapons to be carried by B-47's on alert.[161] Reviewing the Quail equippage and facilities construction program early in May, SAC further noted (a) that the Quail missile would be compatible with only one bomb load configuration for B-47's but would be compatible with all single bomb load configurations for B-52's, (b) that the proposed clip-on attachments for bombs and missiles would require extensive B-47 bomb-bay door modifications, and (6) that B-47 unit and facility requirements for the Reflex Action program and rotation were not firm. In view of these circumstances, CINCSAC recommended to Headquarters USAF on 10 May that all B-52 units be equipped with Quail decoys prior to equipping any B-47 units. He also outlined a B-52 unit priority list for 21 B-52 bomb wings and strategic wings covering facility construction and Quail equippage for inclusion in the FY 1959 MCP, and a second priority list for 12 additional B-52 bomb wings and strategic wings, but only five B-47 wings for inclusion in the FY 1960 MCP. CINCSAC strongly recommended approval of these changes and asked Headquarters USAF to change its programming documents accordingly.[162]

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[160] Memo, Chief, Force Structure Section Plans Div, D/Plns to Brig Gen C. B. Westover, D/Ops, Hq SAC, "Status of GAM-72 (QUAIL) Program," 24 Apr 1958, Exhibit 67.

[161] Memo, Chief, Force Structure Section Plans Div, D/Plns to Brig Gen C. B. Westover, D/Ops, Hq SAC, "Goose and Quail Operational Payoffs," 24 Apr 1958, filed in Hist Div Archives, Hq SAC.

Headquarters USAF generally concurred with the plan to equip the B-52 force first as was soon evidenced by an equippage schedule which indicated that a total of 36 B-52 squadrons would be Quail equipped by the end of FY 1962 in accordance with the following quarterly schedule:[163]

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162. TWX, CINCSAC to COFS USAF, DPL 5629, 10 May 1958, Exhibit 68.

163. Memo for Record, Missile Br Reqts Div, D/Ops, "GAM-72 Phasing Group Meeting WPAFB, 4 Jun 1958," 6 Jun 1958, filed in Central Files DE, Hq SAC.

	FY 1960				FY 1961				FY 1962				Total
	1	2	3	4	1	2	3	4	1	2	3	4	
B-52 Squadrons	0	0	1	0	1	5	6	6	6	6	5	0	36

This schedule also provided for only three squadrons of B-47 aircraft to be equipped with Quail missiles during the fourth quarter of FY 1962.[164]

Numerous revisions were made or contemplated in the Quail program during the latter part of the reporting period. On 19 May Headquarters USAF cancelled the "fly before buy" restriction (i.e., requiring completion of research and development on Quail missiles before a production contract could be awarded)[165] which had contributed to slippages in proposed Quail operational dates. Headquarters USAF also indicated at this time that the aircraft modification program for the Quail weapon system would be conducted in conjunction with the modifications required for the Hound Dog GAM-77 air-to-surface missile.[166] Early in June Headquarters USAF further directed that a quick load capability compatible with weapon loading of B-52 and B-47 aircraft should be incorporated in the Quail program, indicating that funds for this

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164. Ibid.

165. Historical Study No. 70, Vol I, p 104, filed in Hist Div Archives, Hq SAC.

166. TWX, Hq USAF to ARDC, AMC ARDC Det 1 WPAFB, 19 May 1958, filed in D/Plns, Hq SAC.

purpose were now available.[167] Near the middle of June Headquarters ARDC reported that the Quail WSPO was attempting to freeze the operational configuration of the Quail weapon system in order to provide inventory Quail decoys by November 1959. In order to achieve this goal, it observed, the B-52G production program had begun to incorporate Quail requirements and the processing of FY 1959 procurement for Quail production missiles. ARDC also cautioned SAC about recommending too many changes in the Quail program (as it had done periodically) lest it delay the program and increase costs. It suggested that future SAC recommendations consist of three categories: mandatory, desirable and optional.[168]

The Quail Preliminary Operational Plan of July 1957 was under revision during the reporting period and on 30 June 1958 a copy of the revised plan was submitted to Headquarters ARDC for study and approval.[169] Approval of the plan by ARDC, and subsequently by Headquarters USAF, was anticipated later in 1958.

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167. TWX, Hq USAF to ARDC, AFDRD 51578, 3 Jun 1958, Exhibit 69.

168. TWX, COMDR ARDC DET 1 WPAFB to CINCSAC, 13 Jun 1958, filed in D/Plns, Hq SAC.

169. Ltr, Hq SAC to ARDC, "Preliminary GAM-72 Operational Plan (Revised)," 30 Jun 1958, filed in D/Plns, Hq SAC.

Chapter III

THE WS-117L ADVANCED RECONNAISSANCE SYSTEM (ARS)

The possibility of designing and successfully launching a reconnaissance satellite to obtain vital military and other information, a project long under consideration, began to take concrete form on 23 December 1957 when the Directorate of Operations, Headquarters USAF, sent SAC a Preliminary Operations Concept for an Advanced Reconnaissance System (ARS). The mission of an ARS vehicle, as defined therein, was: "To provide operational support planning data for the earliest possible warning of an attack, revealing preparations for a possible attack, and acquiring accurate up-to-date information by continuous aerial surveillance of any possible enemy." More specifically, intelligence data gathered by an ARS vehicle would provide reliable warning and tracking of a high altitude attack, knowledge of any mass weapons threat and air defense systems, reliable information on military bases, launching sites, pre-hostilities force dispositions, characteristics of industrial concentrations, transportation systems and strike damage assessment, and data for total area charts and folders.[170]

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170. Preliminary Operations Concept for the Advanced Reconnaissance System, 23 Dec 1957, prep by D/Ops, Hq USAF, filed in D/Plns, Hq SAC.

The ARS vehicles would not be designed for any particular phase of warfare and have no weapon carrying capability. It would augment rather than supplant other reconnaissance methods. An initial ARS vehicle with boosters would be about 90 feet in length and the orbiting vehicle about 21 feet in length and 60 inches in diameter. It would be placed into orbit by ATLAS primary boosters of 150,000 pounds thrust each plus two secondary boosters. It would orbit at a maximum altitude of about 300 statute miles.

Responsibility for the development phase of the ARS vehicles would be vested in the ARDC. SAC, as the using command, would assume operational control after they became fully operational. The development period was expected to continue from 1960 to 1965 with a full operational capability achieved by the latter date. The development period was divided into three phases:

1. Autumn of 1960 to 1961. A maximum of two operational pioneer vehicles in simultaneous orbit.
2. Autumn of 1961 to Autumn of 1963. An estimated maximum of six to seven vehicles in simultaneous orbit.
3. Autumn of 1963 to Autumn of 1965. An estimated maximum of 18 to 24 vehicles in simultaneous orbit with full surveillance being achieved.

"Pioneer" vehicles would have photographic capabilities and more advanced ARS vehicles would possess electronic signal emission capabilities for the data gathering task. Data processing would also be a SAC responsibility.

Special ground facilities for the ARS project would include:[171]

1. A West Coast launching site.

2. A vehicle tracking, control and telemetry station in Hawaii to provide a ground data gathering capability during the development test phase.

3. Three ARS vehicle intercept, control and data acquisition stations located in the Northwest, the South Central and the Northeast United States. These stations would transmit data from ARS vehicles to a processing center at Headquarters SAC.

Headquarters USAF sent its Preliminary Operational Concept of an ARS vehicle to SAC on 2 January 1958, and requested that it be used as the basis for preparing a Preliminary Operational Plan.[172] Although a draft of the Plan was completed and submitted to Headquarters USAF in April,[173] it had not been formally approved by the end of June.

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171. Ltr, Dept of Air Force to CINCSAC, "Preliminary Operational Concept for Advanced Reconnaissance System," 2 Jan 1958, filed in D/Plns, Hq SAC.

172. Ibid.

173. TWX, CINCSAC to COFS USAF, AFOOP-OC-R 52521, 25 Jun 1958, filed in D/Plns, Hq SAC.

Because of the minifold intelligence value in orbiting reconnaissance vehicles, the Secretary of the Air Force had recommended to the Office of the Secretary of Defense on 12 November 1957 that military reconnaissance and other outer space projects be accelerated. He also advocated establishment of an interim reconnaissance capability. These views were reaffirmed in another memo dated 1 February 1958.

In a formal reply to the Secretary of the Air Force the Secretary of Defense on 28 February authorised the acceleration of the WS-117L Project and stated that it had been given the highest national priority. He disapproved, however, of the development of an interim reconnaissance capability (with the use of a Thor missile booster plus a second stage to launch a recoverable capsule from a satellite) on the grounds that it would duplicate rather than complement the planned Atlas WS-117L program, and because the project appeared to have questionable military value. He permitted, however, the use of a Thor booster and second stage for satellite test firing purposes, and for making experimental flights with laboratory animals in pursuance of manned satellite projects.[174] The accelerated program promised to give the Air Force a reconnaissance vehicle capability about one year earlier than previously planned.[175]

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[174] Memo, Mr. Neil H. McElroy to the Secretary of the Air Force, "Air Force WS-117L Program (Reconnaissance System) 24 Feb 1958, Exhibit 70; TWX, ARDC to AFBMD, Cite TWX 03-014, 5 Mar 1958, Exhibit 71.

Considerable progress was made during the reporting period in getting the accelerated WS-117L program under way. A tri-service controlled section of Cooke AFB, Lompoc, California was selected as the main launching site for ARS vehicles. In June, formal approval of the site was being negotiated with Headquarters USAF and the Bureau of Aeronautics.[176] In order to select the three tracking and data acquisition station sites in the Continental United States, a special Site Selection Board was established composed of representatives of USAF, AFBMD, ARDC, AMC, BMO, SAC, USAFSS, AACS and SAC MIKE. Convening formally for the first time during the period 26-28 February, the Board revised site selection criteria developed by AFBMD, and made arrangements to establish survey teams for the Northwest, South Central and Northeast areas. The siting criteria, as developed, indicated that each tracking and data acquisition station would require buildings for administration and command purposes, for data acquisition and processing, for VHF and UHF telemetry, and for communications transmission and receiving. A typical site would require about 1,600 acres with considerable easements, be

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175. Memo for General Westover, "WS-117L Program," 27 Mar 1958, filed in D/Plns, Hq SAC.

176. File, R&D 12-2, Facilities WS-117L, filed in D/Plns, Hq SAC; DF, DE to D/Compt, "Monthly Strategic Missiles Report."

relatively free of electronic and electromagnetic interference, and have three degrees of line of sight horizontal clearance. Each station would be located on or adjacent to a military base to insure the use of base support facilities.[177] Data processing and control of ABS vehicles would be performed from a special building at Headquarters SAC. A BOD of FY 3/60 was established for this building.[178]

In addition to the three main stations to be established in the Northwest, South Central and Northeast parts of the United States, five test tracking and data acquisition stations were also needed for ABS vehicle launchings from Cooke AFB. These smaller stations would be located in the vicinity of Cooke AFB, Oxnard, California; Kaena Point, Hawaii; and Anchorage and Sitka, Alaska.[179]

The task of surveying and siting for both testing and primary tracking and data acquisition stations moved forward rapidly. Sitings

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177. TWX, AFBMD to USAF, ARDC, AMC, BMD, SAC USAFSS, AACS, SAC MIKE, WDTR-2-13-E, 14 Feb 1958, Exhibit 72; TWX, ARDC to USAF INSTLS REP NOR ATL REGION, AMC, SAC, USAF, ARDC, AACS, WDIR-3-9E PD, 6 Mar 1958; Exhibit 73; Memo for Record, "Site Survey for WS-117L, Northwest Area," 31 Mar 1958, prep by Missiles Facilities Section, Planning Br, Base Development Div DE Hq SAC, filed in Central Files DE, Hq SAC.

17[illegible] DF, D/Plns to D/Compt, "Monthly Strategic Missile Report," 7 Jul 1958, filed in Mgt Analysis Div, D/Compt.

179. Weapon System 117L Program Status Report, 15 Apr 1958, prep by AFBMD and ARDC, Inglewood, Calif, filed in D/Plns, Hq SAC.

for the test stations near Cooke AFB and in Hawaii and Alaska were completed by June.[180] Early in June the Site Selection Board formally approved the selection of Fort Stevens, Tongue Point, Oregon as the site for one of the three main stations to be established in the continental United States.[181] Final decisions on station sites for the South Central and Northwest parts of the United States were still pending, however, at the end of the month.

As has been indicated, the test flight phase of the ARS program would witness the use of both Thor and Atlas booster missiles. The first Thor booster flight was scheduled to be launched from Cooke AFB late in 1958, and the first Atlas booster flight was scheduled to be launched from the Air Force Missile Test Center, Florida by mid-1959. A progressively stepped up series of flight tests was planned. A functional mockup of the airframe of an ARS vehicle was being developed during the reporting period by the Lockheed Aircraft Corporation, the prime systems contractor for the ARS program. The development program was divided into eight distinct phases.[182]

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180. Ibid.

181. Minutes of the WS-117L Site Selection Board, 11 Jun 1958, Exhibit 74; DF, DM to D/Compt, "Monthly Strategic Missiles Report," 8 Jul 1958, filed in Mgt Analysis Div, Hq SAC.

182. Weapon System 117L Program Status Report, 15 Apr 1958, prep by AFBMD and ARDC, Inglewood, Calif, filed in D/Plns, Hq SAC.

Satellite intelligence requirements were under extensive study during the reporting period. However, in order to satisfy specific intelligence requirements of Defense Department and other governmental agencies, Headquarters USAF established a Satellite Intelligence Requirements Committee. The first meeting of this committee was held on 16 May. There were indications that the priorities established and the volume of intelligence requirements processed by this Committee might result in the subordination of SAC's requirements.[183]

SUMMARY

By the end of June 1958, both of SAC's subsonic surface-to-surface weapon systems had moved significantly forward toward the goal of operational readiness. In the Snark program, further consideration to enlarge the 51-missile program approved late in 1957 was abandoned,[184] and construction activity had begun at Presque Isle AFB, Maine where the entire Snark force would be placed. SAC's efforts to obtain Headquarters USAF's approval to establish Presque Isle AFB as a permanent "hard core" Air Force base (thereby assuring better Snark facilities), were unsuccessful. It was generally assumed that the Snark weapon system would be

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183. Memo for Record, "Report of WS-117L Weapons System Phasing Group Meeting, 21-22 May 1958," 28 May 1958, Exhibit 75.

184. Interview, J. Van Staaveren with Maj L. R. Harvey, Future Weapons Section, FS&FW Br, D/Plns, Hq SAC, 6 Aug 1958.

phased out at a relatively early date and be succeeded by ICBM weapons.[185] The Goose program was highlighted by the release of FY 1959 funds totalling $39,000,000 by Headquarters USAF to complete research and development, for an initial missile inventory, and for production tooling. In addition, six of ten Goose squadron sites had been approved. Some slippage in the Goose program continued, however, because of difficulties encountered in developing a sufficiently powerful Goose engine. A decision to disperse Goose squadrons and not place them on or near high priority targets was indicative of the increasing attention being given to the problem of survivability of missile weapon systems.

Flight tests of both Snark and Goose missiles continued during the reporting period. By the end of June well over 50 Snark flight tests had been conducted, a few at maximum range. Many technical difficulties were still being experienced during these tests. Ten flight tests of Goose missiles had been conducted by the end of the month, one flight lasting nearly five hours.

In the IRBM program, the major diplomatic and military negotiations and agreements leading to the establishment of of four Thor squadrons in the United Kingdom were completed

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185. Ibid.

during the first six months of 1958. The British Government's decision to retain operational command and control over all four squadrons, however, made it necessary for SAC to convert its 672nd Strategic Missile Squadron into a technical training squadron. Outside of the United Kingdom, a slowdown in the IRBM program was threatened because of the lack of U. S. diplomatic success in negotiating timely IRBM agreements with other NATO member nations. By June the political aspects inherent in the IRBM program had developed into one of the most serious obstacles to expeditious missile planning and programming with which SAC and the entire Air Force had to contend, and over which they had no control.[186] In an effort to meet the December 1958 operational date for two IRBM squadrons, Headquarters USAF directed that preliminary action be taken to place a squadron in Alaska, an emergency measure to which SAC objected vigorously. SAC also continued to be concerned about the lag in the Jupiter program. An insufficient number of Jupiter missiles with operational configurations were being tested and there was slippage in the Jupiter training program. As a consequence of these and related difficulties, final Defense Department approval of a 12-squadron IRBM program (nine Thor and three Jupiter squadrons) was being held in abeyance.

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186. Interview, J. Van Staaveren, Historian with Col E. A. Vivian, Chief FS&FW Br, D/Plns, Hq SAC, 18 Sep 1958.

The six Thor launching tests conducted during the first half of 1958 were highlighted by two successful nose cone separation and re-entry tests with one nose cone recovered by ship. Several other launchings were partially successful. Only two Jupiter launchings contributed to the development of an operational missile. Three other launchings were made with a Jupiter C missile for the purpose of launching satellites, including the first U. S. satellite which was placed in orbit on 23 January. Two of the three satellite launching attempts were successful.

Whereas the IRBM program was in danger of falling behind schedule, the ICBM program was moving ahead of schedule by the end of June.[187] A total of three Atlas and one Titan operational sites had been selected. Extensive surveying work was underway preparatory to selecting additional sites. A major step toward providing greater survivability for the ICBM force was taken during the reporting period by the adoption of the single squadron concept (i.e., placing only one squadron near an operational Air Force base), and of the intra-squadron dispersal concept. The single squadron concept was personally recommended by CINCSAC and subsequently approved by Headquarters USAF.[188] Together, both concepts promised to reduce the dangers inherent in overconcentration of ICBM units near Air Force bases by creating many additional "aiming points" for the enemy. Studies on hardening ICBM facilities were also continuing. A decision was made to harden Atlas facilities at 25 psi beginning with the fifth Atlas squadron, and to harden all of the initial Titan units up to 100 psi. The desire to provide greater protection to the ICBM force promised, however, to greatly increase the financial cost and manpower needs per squadron. At the end of June SAC was participating with other commands in trying to keep the monetary costs and manpower requirements of an Atlas squadron within previously prescribed limitations.

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[187] Interview, J. Van Staaveren, Historian with Col E. A. Vivian, Chief, FS&FW Br, D/Plns, Hq SAC, 18 Sep 1958.

[188] *Ibid.*

Five Atlas flight tests were conducted during the first six months of 1958 of which two were successful. This brought to eight the total number of Atlas flight tests made since they began in 1957. Flight testing of Titan missiles was expected to begin late in 1958.

In the air-to-surface missile programs of primary interest to SAC, funds for RASCAL facilities were authorized and construction work begun at Pinecastle AFB, Florida. The beginning of the equipment and suitability testing (E&ST) phase of the RASCAL program revealed many malfunctionings of the missile with the result that the program slipped three months behind schedule.

GLOSSARY

AACS	Airways and Air Communications Service
AFBMC	Air Force Ballistic Missile Committee
AFBMD	Air Force Ballistic Missile Division
AMC	Air Materiel Command
ARDC	Air Research and Development Command
ARS	Advanced Reconnaissance System
BMO	Ballistic Missile Office
BOD	Beneficial Occupancy Date
CINCSAC	Commander in Chief, Strategic Air Command
CY	Calendar Year
ECM	Electronic Countermeasures
EWP	Emergency War Plan
E&ST	Equipment and Suitability Test
FAF	French Air Force
FY	Fiscal Year
GAM	Guided Aircraft Missile
GSE	Ground Support Equipment
ICBM	Intercontinental Ballistic Missile
IOC	Initial Operational Capability
IRAN	Inspection and Repair as Necessary
IRBM	Intermediate Range Ballistic Missile
JCS	Joint Chiefs of Staff
MCP	Military Construction Program
NAI	Northrup Aviation, Inc.

NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NM	Nautical Mile
OCAMA	Oklahoma City Air Material Area
PFRT	Preliminary Flight Rating Test
PSI	Pounds Per Square Inch
RAF	Royal Air Force
SAC	Strategic Air Command
SHAPE	Supreme Headquarters Allied Powers, Europe
SM	Strategic Missile
SMAC	Snark Maximum Attack Capability
SMS	Strategic Missile Squadron
SOP	Standard Operating Procedure
T.O.	Technical Order
UE	Unit Equipment
UHF	Ultra High Frequency
UK	United Kingdom
USAF	United States Air Force
USAFE	United States Air Force in Europe
USAFSS	United States Air Force Security Service
VHF	Very High Frequency
WS	Weapon System
WSPO	Weapons System Project Office

CHRONOLOGY

The following missile chronology covers the highlights of events bearing directly and indirectly on SAC's Participation in the Missile Program during the period 12 July 1957 to 11 October 1958. An initial missile chronology is contained in Historical Study No. 7[illegible] filed in OIH, Hq SAC.

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12 Jul 57	Hq USAF directs cancellation of the Navaho program. Overall development costs of the Navaho are placed at $690,000,000.
9 Oct 57	Hq USAF issues a draft Preliminary Operational Concept for the B-52 ASM (Hound Dog) GAM-77 weapon system.
6 Dec 57	The first attempt to place a satellite into orbit with the Vanguard rocket is unsuccessful.
23 Dec 57	The Directorate of Operations, Hq USAF, publishes a Preliminary Operations Concept for the Advanced Reconnaissance System (ARS).
1 Jan 58	The 392d Missile Training Squadron (IRBM), having been relieved from assignment to ARDC and assigned to SAC, is further assigned to the 704th Strategic Missile Wing at Cooke AFB by SAC GO 1, dated 2 January 1958.
2 Jan 58	Hq USAF sends a copy of Preliminary Operations Concept for the Advanced Reconnaissance System (ARS) to Hq SAC and requests SAC to prepare a Preliminary Operational Plan pursuant to AFR 5-47, dated 29 August 1956.
4 Jan 58	The Chrysler Corporation is awarded $51.8 million in contracts for Jupiter SM-78 missile production.
8 Jan 58	SAC publishes Final Snark SM-62 Operational Plan.
10 Jan 58	Secretary of Defense Neil H. McElroy reveals that the Army has been ordered to replace the liquid fuel Redstone with a solid fuel ballistic missile.
10 Jan 58	The fourth Atlas SM-65 is launched with successful test results.

14 Jan 58	A Jupiter "A" SM-78 is launched in support of Project Hardtack to determine the feasibility of making a thermonuclear detonation at high altitude.
18 Jan 58	The Defense Department publicly announces that William M. Holaday, Defense Department Director for Guided Missiles, will direct all anti-missile weapon development in the Army and Air Force.
22 Jan 58	Secretary of Defense, Neil H. McElroy, informs the Senate Preparedness Investigating Subcommittee of 14 separate actions taken by the Defense Department to speed up the missile and other essential defense programs.
23 Jan 58	Statement of the Senate Preparedness Investigating Subcommittee is issued by Chairman Lyndon B. Johnson and Ranking Minority Member Styles Bridges at the direction of the Subcommittee upon conclusion of Hearings on Inquiry Into Satellite and Missile Programs. Senator Johnson lists "17 points" on which decisive action must be taken by the United States.
29 Jan 58	The Defense Department publicly announces establishment of a ballistic missile training range on the Pacific Coast that will eventually extend several thousand miles over the ocean.
29 Jan 58	SAC issues Staff Memorandum 11-44 defining administrative functions of the Office of Assistant CINCSAC (SAC MIKE) at Inglewood, California.
31 Jan 58	An elongated Redstone frame combined with a North American 75,000 pound thrust engine (known as a Jupiter C) places America's first satellite, Explorer I, into orbit.
31 Jan 58	SAC Regulation 23-8 is published setting forth the mission of the 1st Missile Division.
1 Feb 58	The Missile Division of the Directorate of Materiel, Hq SAC, is redesignated as the Missile Maintenance Division and is responsible for all maintenance-engineering functions pertaining to strategic missile weapon systems except those concerning the nose cone/warhead.
1 Feb 58	The 4320th Strategic Wing (Missile) is organized at Francis E. Warren AFB, and assigned to the 1st Missile Division by SAC GO 7, dated 10 February 1958, as amended by SAC GO 9, dated 18 February 1958.
5 Feb 58	The second attempt to place a satellite into orbit with the Vanguard rocket is unsuccessful.

25 Jun 58	A team from SAC, AFBMD, and Alaskan Air Command convenes at Elmendorf AFB, Alaska, to finalize the technical siting of Thor SM-75 and/or Jupiter SM-78 units, and to prepare a draft support agreement between SAC and Alaskan Air Command.
26 Jun 58	Major General William H. Blanchard, Commander of SAC's 7th Air Division in the United Kingdom, and Air Marshal Geoffery W. Tuttle, Deputy Chief of Staff of the RAF, sign a U.S. - RAF Technical Agreement relative to establishing IRBM squadrons in the United Kingdom.
27 Jun 58	The 60th Snark SM-62 launching takes place, representing the first all military launch of a phase VII equipment and suitability test missile by the 556th Strategic Missile Squadron.
30 Jun 58	A revised Quail GAM-72 Preliminary Operational Plan is submitted to ARDC for study and approval.
1 Jul 58	The 564th Strategic Missile Squadron (ICBM-ATLAS) is activated at Francis E. Warren AFB, and assigned to the 706th Strategic Missile Wing (ICBM-ATLAS) by SAC GO 27, dated 28 May 1958.
1 Jul 58	Hq USAF approves the USAF - RAF revised "IRBM Technical Agreement."
1 Jul 58	SAC issues a revised Goose SM-73 Preliminary Operational Plan.
7 Jul 58	SAC issues Staff Memorandum 20-2, establishing the functions and responsibilities of the AFJUPLO SAC Liaison Office, Army Ballistic Missile Agency (ABMA) and its relationship to the Jupiter Weapon System Project Office (WSPO).
9 Jul 58	SAC issues a revised Snark SM-62 Programming Plan.
9 Jul 58	The Thor SM-75 makes a successful flight with ABLE nose cone reentry demonstrated for the first time.
15 Jul 58	SAC issues a Final WS-131B Hound Dog GAM-77 Operational Plan.
17 Jul 58	Hq USAF directs that a team of personnel from SAC, ARDC, AMC, and ATC be established to review ground support equipment for missiles.

21 Jul 58	Hq USAF announces selection of five companies to do research and development work on the solid-fueled, intercontinental Minuteman missile. This is the first major contracting for this missile.
23 Jul 58	The first B-52G bomber is produced by Boeing's Wichita, Kansas plant. The B-52G is equipped to carry the Hound Dog GAM-77.
24 Jul 58	The Senate votes to set up a fifteen-member Committee on Aeronautical and Space Sciences. It will deal with all outer space developments except those primarily associated with military weapons.
25 Jul 58	The 51st Aviation Depot Squadron is activated at Cooke AFB, and assigned to the 704th Strategic Missile Wing (ICBM) by SAC GO 37, dated 14 July 1958, as amended by SAC GO 52, dated 15 August 1958.
29 Jul 58	President Eisenhower signs a bill creating the National Aeronautics and Space Agency (NASA).
31 Jul 58	Construction of the Operational System Test Facility for the Titan SM-68 is initiated at Cooke AFB. This is a prototype of the hard base, consisting of one silo-lift launcher, blockhouse, and associated equipment. Tests here will prove out the operability of the hard base using operational equipment in a simulated hard environment.
8 Aug 58	President Eisenhower appoints T. Keith Glennan as administrator of the new National Aeronautics and Space Agency (NASA). Dr. Hugh L. Dryden, director of the National Advisory Committee for Aeronautics (NACA) --which is absorbed by NASA-- is named deputy director of NASA.
17 Aug 58	An Air Force attempt to place a lunar probe into orbit around the moon is unsuccessful. The Thor ABLE missile used to launch the 85-pound probe is in flight for 77 seconds.
1 Sep 58	The 866th Strategic Missile Squadron (IRBM-JUPITER) is activated at Huntsville, Alabama, and further assigned to the 704th Strategic Missile Wing (ICBM) by SAC GO 52, dated 15 August 1958.

1 Oct 58	The 6592d Support Squadron (Missile Technical) having been relieved from assignment to ARDC and assigned to SAC, is redesignated the 3990th Support Squadron (Missile Technical) by SAC GO 52, dated 15 August 1958.
2 Oct 58	The 3990th Support Squadron (Missile Technical), Offutt AFB, Nebraska, is discontinued by SAC GO 52, dated 15 August 1958.
11 Oct 58	Air Force attempts second Thor Able Lunar Probe. This is considered successful; however, final velocity is lower than desired and the vehicle ultimately returns to earth and burns up as it enters the atmosphere.